Fertility Trends, Women's Status, and Reproductive Expectations in Turkey

Hacettepe University
Institute of Population Studies

Demographic and Health Surveys
Macro International Inc.

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Results of Further Analysis of the 1993 Turkish Demographic and Health Survey

Hacettepe University
Institute of Population Studies
Ankara, Turkey

Macro International Inc.
Calverton, Maryland USA

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This report summarises additional findings of the further analysis for the 1993 Turkish Demographic and Health Survey (TDHS). This second report of the further analysis project was coordinated and conducted by Hacettepe University, Institute of Population Studies. Macro International Inc. provided technical assistance. Funding was provided by the U.S. Agency for International Development (USAID).

The TDHS analysis is part of the worldwide Demographic and Health Surveys (DHS) programme, which is designed to collect data on fertility, family planning, and maternal and child health. Additional information about the Turkey analysis project may be obtained from the General Directorate of Maternal and Child Health and Family Planning, Ministry of Health, Sihhiye, Ankara, Turkey (Telephone: 312-4314871; Fax: 312-4314872), or from Hacettepe University, Institute of Population Studies, 06100 Ankara, Turkey (Telephone: 312-3107906; Fax: 312-3118141). Additional information about the DHS programme may be obtained by writing to: DHS, Macro International Inc., 11785 Beltsville Drive, Calverton, MD 20705 (Telephone: 301-572-0200; Fax: 301-572-0999).

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PREFACE

Turkey has a long history of demographic surveys. The first national demographic survey, called the Turkish Demographic Survey (TDS), was conducted in 1963 by the School of Public Health under the supervision of Professor Nusret Fişek, then director of the school. This survey made possible for the first time the estimation of vital rates on a national basis.

Since its establishment in 1967, the Hacettepe Institute of Population Studies (HIPS) has been the key research and training institution in Turkey for population and demographic studies. HIPS has conducted six national demographic surveys between 1968 and 1993 on a quinquennial basis. The first of these, the 1968 Survey on Family Structure and Population Problems was staged exactly five years after the 1963 TDS. Among these surveys, the 1978 Turkish Fertility Survey was conducted in collaboration with the World Fertility Survey, and the latest survey called the 1993 Turkish Demographic and Health Survey (TDHS) was conducted in collaboration with the General Directorate of Mother and Child Health and Family Planning, Ministry of Health and Macro International Inc. as part of the worldwide Demographic and Health Surveys (DHS) program.

Information on population dynamics and health indicators at national and rural-urban levels, and geographical regions are collected in these surveys. Implementing organizations such as the Ministry of Health use the findings of these surveys in the preparation of national strategies, and for the analysis of trends in population dynamics and fertility control. Also, population and health indicators are taken as bases by the State Planning Organization in the preparation of five-year development plans and population projections.

Another institution which conducts demographic surveys in Turkey is the State Institute of Statistics (SIS). The SIS, which was recently reorganized, has begun to devote more attention to the dissemination of statistical and population data and relevant research. SIS conducted the TDS in 1989 and disseminated these findings in 1993. In this survey, in addition to the social and economic characteristics of household members, information on fertility and mortality was also collected, and based on these data, a national life table was constructed.

Greater attention to the analysis, dissemination, and utilization of various data sources are needed. A wealth of demographic and population-related data is available from a series of censuses and surveys carried out by various institutions. Specific efforts are needed either to reconcile differences of these data and/or to provide decisionmakers and planners with scientific interpretations for the trends or interrelationships within the context of development planning.

The main report of the 1993 TDHS and the publication that followed, *Trends in Fertility, Family Planning and Childhood Mortality in Turkey*, together with the two volumes of further analysis reports—*Contraception, Abortion and Maternal Health Services in Turkey* and the present volume—should be viewed as important steps toward achieving this goal.

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FERTILITY TRENDS

IN TURKEY: 1978-1993

Attila Hancıoğlu

1 INTRODUCTION

The rapid decline of fertility is one of the major demographic issues in Turkey in recent years. During a period of notable economic and social transformation, demographic sample surveys have consistently produced information indicating an accelerated and sustained decline in the level of current fertility. In the 1978 Turkish Fertility Survey, the single-year total period fertility rate was estimated at 4.3 children per woman. The comparable figure from the 1993 Turkish Demographic and Health Survey (TDHS) was 2.7 children, implying a reduction in period fertility of almost 40 percent over a period of 15 years (HIPS, 1980; Toros, 1994).

Only a handful of comparative/retrospective analyses of fertility trends have been carried out in Turkey, although an unbroken series of data from quinquennial demographic surveys is available. Since reliable information from the birth registration system is lacking, this implies that our understanding of the apparent Turkish fertility transition is largely descriptive in nature and that the existing rich body of information from demographic surveys needs to be exploited further in order to provide more convincing evidence on the magnitude and nature of changes in Turkish fertility.

This study attempts to reevaluate the results of demographic surveys in Turkey, so as to provide estimates of fertility levels and trends, and discuss the components of fertility decline since the late 1970s. Although sample surveys provided hints of a significant change in the fertility behavior of the Turkish population, there actually exists a number of peculiarities in the survey data that makes the straightforward interpretation of these changes more problematic than it should normally be. Therefore, a significant proportion of this study is devoted to the analysis of data quality.

The following sections include analyses of the quality of data obtained in the 1993 TDHS, with an emphasis on the types of data with direct implications on fertility estimation. Analyses of levels and trends in fertility during the period from the late 1970s to the early 1990s are preceded by a section on the changes that have taken place in Turkey with regard to proximate determinants of fertility during the same period. Information on changes in contraceptive use, abortion, marriage, postpartum infecundability and sterility are used to assess the reliability of the fertility trends implied by surveys, and to discuss the relative importance of these biological and behavioral mechanisms in the reduction of fertility.

Regional disparities have always been central to demographers' work in Turkey. Policies and development strategies have been based on minimizing regional differences, which are important not only in terms of demographic indicators, but also for social, economic and cultural indicators/variables. Regional differences have attracted more attention than, for example, urban-rural differences, possibly as a result of the easily perceived and vast cultural, social and economic differences between the regions, and the relative ease with which region-based analyses can be undertaken, given the fact that sample surveys have usually used the five major regions of the country as sampling strata. Especially when trend analysis is considered, frequent changes in the administrative statuses of localities, and changes in the criteria used for urban-rural classification preclude straightforward analyses by urban and rural residence. It is for this reason that in this study, particular emphasis has been put on fertility differentials and trends in Turkey at the regional level.

2 DATA SOURCES

The main data source for this study is the 1993 Turkish Demographic and Health Survey (TDHS), which was carried out by Hacettepe University Institute of Population Studies (HIPS), in collaboration with the Turkish Ministry of Health and Macro International Inc. The survey was conducted as part of the worldwide Demographic and Health Surveys project with a nationally representative sample. Interviews were completed in 8,619 households from August to October 1993. An individual questionnaire was administered to 6,519 eligible women (ever-married women age 12-49) living (or present the previous night of the interview) in these households.

A weighted, stratified multistage cluster sampling approach was adopted to select households from the sampling frame provided by the State Institute of Statistics, and subsequently updated by the 1993 TDHS listing teams a few months before the main fieldwork commenced. The criteria for stratification were the geographical regions of the country and population size groups of settlements. Response rates of 96.8 and 95.0 percent were obtained for the household and individual interviews, respectively. Detailed information on the methodology of the TDHS can be found in the main report of the survey (MOH et al., 1994).

Detailed information was collected from eligible women interviewed in the TDHS on a variety of background characteristics, such as age, education and marriage. Women were also asked to provide information concerning the following: fertility; contraceptive knowledge and use; antenatal, delivery and postnatal care; health status of children under five; fertility preferences; husbands' background characteristics; and values, attitudes and beliefs regarding childbearing, intrafamilial relationships, and child care.

The TDHS data permit the estimation of current levels of fertility, as well as trends in the recent past. Each woman interviewed in the TDHS was asked the number of sons and daughters she had ever borne, and the number of children surviving from these live births. Women were then asked to provide a history of all of their births, including the month and year of birth, sex, survival status and other information on each birth.

The TDHS is the latest in a series of quinquennial surveys conducted by HIPS since the 1960s. Although the TDHS is broadly comparable to the earlier surveys, it differs from them in a number of respects. One important difference between the TDHS and its predecessors was the administration of a birth history in the individual questionnaire, rather than a full pregnancy history. In other words, women supplied information on all of their live births, but not on those pregnancies which terminated with stillbirths, abortions or miscarriages. Such information was primarily obtained through Brass-type questions. The exclusion of such information from the maternity histories of women was partly compensated by the inclusion of a demographic calendar at the end of the questionnaire, which collected information on the dates of several demographic events, including all pregnancies, contraceptive use and discontinuation, migration, breastfeeding, postpartum amenorrhoea and abstinence during the period from January 1988 to the survey date.

In this study, data from three national surveys that have preceded the 1993 TDHS are used to complement the analyses from the TDHS. The earliest of these is the 1978 Turkish Fertility Survey (TFS), which was carried out as part of the World Fertility Survey project (HIPS, 1980). The 1978 TFS covered a nationally representative sample of 5,142 households and 4,431 ever-married women of reproductive age. In between these two surveys, which were conducted within the frameworks of the international WFS and DHS projects, two other national demographic surveys were carried out in Turkey. Data from these surveys are also used in this study. The first of these was the 1983 Turkish Fertility and Health Survey (TFHS), which had a sample of 6,545 households and 5,398 ever-married women, and the 1988 Turkish Population and Health Survey (TPHS), which had a sample of 6,552 households and 5,257 ever-married women (HIPS,

1987, 1989). The methodologies, questionnaires, and main themes of both of these surveys were largely based on the World Fertility Surveys, Contraceptive Prevalence Surveys, and Demographic and Health Surveys projects, and are, therefore, broadly comparable with the 1978 TFS and the 1993 TDHS.

3 ASSESSMENT OF DATA QUALITY

There are various types of error that can distort fertility measures one would like to estimate from demographic surveys. The first main type of error is that related to sampling procedures used in the selection and implementation of the survey sample, including sampling errors, response rates and associated problems of representativeness. These types of error are largely beyond the scope of this study; detailed evaluation of the sampling procedures of the 1993 TDHS and the previous surveys can be found elsewhere (HIPS, 1980, 1987, 1989; Ulusoy et al., 1994).

The second main types of error are those which are collectively termed response errors, which are typically more problematic (and serious) than those related to sampling procedures. From the perspective of this study, response errors relate to those types of error which may distort fertility rates by either misreporting the date of an event or the duration since the occurrence of an event, or the altogether omission of the event. Such errors can originate from the respondents or from the interviewers, and are generally more difficult to correct once data collection is over. However, it is necessary to discover and describe such errors so that false interpretation of survey results can be avoided. The analyses that follow have been undertaken to demonstrate the types of response errors present in the survey data, particularly the 1993 TDHS.

3.1 The Extent of Age Misreporting in the Household Schedule

Age is one of the most important pieces of information for demographic analysis, as it correlates very strongly not only with fertility, but also with mortality, migration, and other social and demographic processes. Age misreporting in demographic surveys can lead to serious biases, since it affects the selection of eligible individuals for interviews and directly influences and distorts the real levels and trends in fertility.

One of the most frequent forms of age misreporting is age heaping, which refers to the tendency to report ages ending in certain digits. To assess the extent of age heaping in Turkey, the Myers Index has been calculated for household members age 0-69 from the 1993 TDHS. The index has theoretical limits of 0 and 180, respectively indicating no preference for any digit, and preference of one digit at the expense of all others (Shryock and Siegel, 1976). Table 3.1 shows the index values and the degree of preference or avoidance of each of the 10 digits in the 1993 TDHS.

Table 3.1 Percent distribution by sex of the Myers Index showing the degree of preference of terminal digits in the household data on age, 1993 TDHS

Myers Index	Males	Females	Total
Total	15.3	14.0	14.6
0	2.3	3.1	2.7
1	-2.9	-2.1	-2.5
2	-0.9	-0.2	-0.5
3	0.9	0.8	0.9
4	-1.3	-1.5	-1.4
5	3.5	2.8	3.2
6	-0.7	-0.7	-0.7
7	0.1	0.0	0.0
8	0.7	0.3	0.5
9	-1.8	-2.6	-2.2

Myers Index values of less than 10 indicate low levels of digit preference, values of 10 to 20 indicate moderate levels of digit preference, and values above 20 indicate high levels of digit preference (Rutstein and Bicego, 1990). Table 3.1 shows that there is moderate digit preference in the 1993 TDHS, and that there is less heaping for women's ages, which is an unexpected finding since women in Turkey are less educated than men, and are therefore assumed to know their exact age with less precision. The finding, however, can be attributed to the fact that a majority of household questionnaires in the 1993 TDHS were completed with

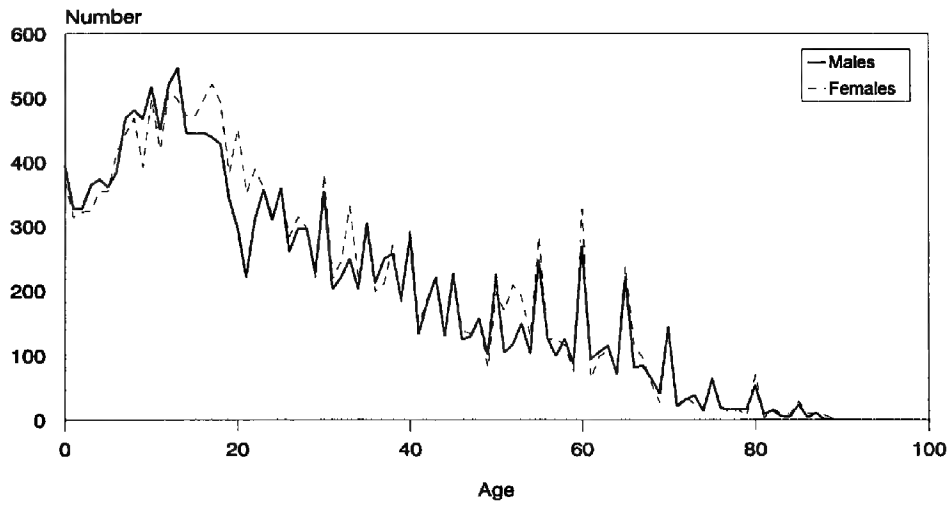
women (79.7 percent). Males' ages were therefore obtained as proxy information from women in many cases.

The 1993 TDHS appears to have collected age information with less heaping, compared to the 1978 TFS, where the Myers Index values for the same age range are calculated as 15.6, 21.3, and 18.3 for males, females and the total population, respectively. Almost all of the improvement from 1978 to 1993 can be attributed to better information obtained on women's ages, since little improvement, if any, has been obtained for males' ages, which again, may be due in many cases to the collection of household age data from women. However, it also should be kept in mind that the procedures used for the collection of information on age were slightly different in the two surveys: the 1978 TFS household questionnaire included a question on the year of birth as well as age, while the 1993 TDHS asked household members only of the latter.

Table 3.1 also provides evidence of strong preference for ages ending with digits 0 and 5, as expected. Avoidance of ages ending with digits 1 and 9 is clearly observed. There is also some indication of preference for digits 3 and 8, possibly as a result of birth year heaping on years ending with digits 0 and 5.

Figure 3.1 shows single year age distributions of male and female household populations in the 1993 TDHS. A false concentration of reported ages at preferred digits is evident for both males and females; the saw-tooth patterns due to heaping are stronger after age 50 for both sexes, particularly for females. A more interesting observation from the figures are the age distributions below the teenage years. For both males and females, there is an excess of infants (age 0) compared to those age 1-4, increasing numbers of persons from age 1 to the teenage years, and sharp declines in the numbers of persons from the teenage years onward.

Figure 3.1 Distribution of Male and Female Population by Single Years of Age, 1993 TDHS



Interestingly, this age (reporting) pattern in the 1993 TDHS is reminiscent of patterns observed in previous surveys, as well as censuses. Table 3.2 shows the single-year and five-year age distributions from a number of surveys and censuses, indexed to the number of infants for single-year age distributions and to the number of persons in age group 0-4 for five-year age distributions. In all data sources, there is clearly

an apparent excess of infants relative to one-year-old children, with the exception of the 1980 Census. In most cases, this excess extends over two-year-old children as well. It appears that there is a characteristic pattern of reporting children's ages, possibly as a consequence of age misreporting and omission of young children.

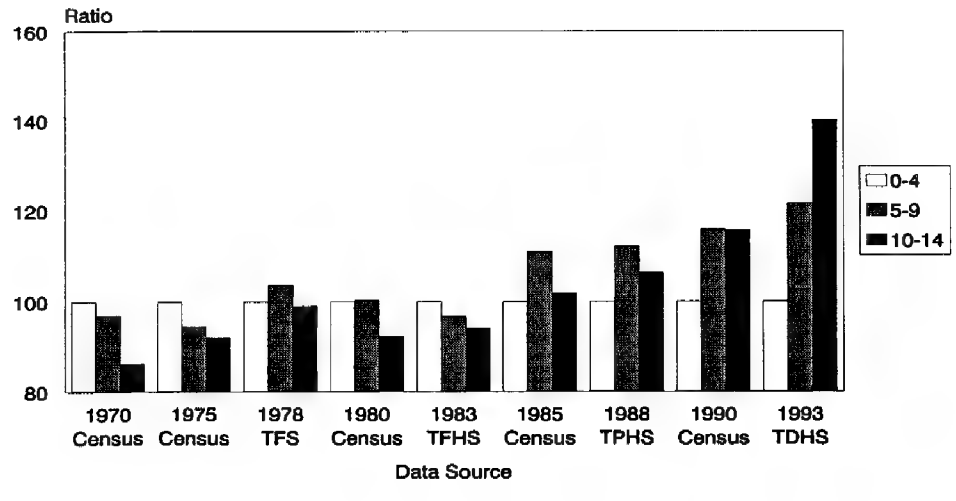
Table 3.2 Distribution of age reporting in Turkish surveys and censuses, 1970-1993

Age distribution	Surveys				Censuses				
	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS	1970	1975	1980	1985	1990
Single ages									
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	93.4	80.5	82.7	83.6	94.1	72.3	100.7	97.3	90.3
2	97.4	93.7	88.1	84.8	115.3	89.0	118.8	124.1	94.9
3	100.0	100.5	100.4	89.7	116.1	90.7	118.8	135.0	122.9
4	99.2	96.0	103.3	94.8	124.0	97.8	124.0	142.6	125.3
Five-year age groups									
0-4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
5-9	103.6	96.7	112.2	121.6	96.9	94.4	100.2	110.9	115.9
10-14	99.0	94.1	106.4	140.1	86.2	92.1	92.3	101.9	115.7

Census' Sources: State Institute of Statistics (1977; 1982; 1984; 1989; 1993).

When five-year age groups are considered, an interesting trend of change in the relative sizes of groups can be detected (Figure 3.2). In the earlier censuses and surveys (1978 TFS, 1983 TFHS, and 1970, 1975 and 1980 censuses), ratios of populations age 10-14 to 0-4 are consistently below 100, while the ratio of those age 5-9 to 0-4 is either below or close to 100. In later sources (1988 TPHS and 1985 census), the

Figure 3.2 Ratio of 5-9 and 10-14 Year-Old Population to the 0-4 Year-Old Population in Censuses and Surveys in Turkey



Note: Population 0-4 = 100

largest group is the 5-9 age group, while the size of the 10-14 age group is larger than that of the 0-4 age group. In the 1990 Census, however, while the largest of these groups is the 5-9 age group, the size of the 10-14 group is larger than that of the 0-4 year-olds, and the sizes of the 5-9 and 10-14 age groups are very similar. Finally, in the 1993 TDHS, the largest number of persons is in the 10-14 age group, while the size of the 5-9 age group is considerably larger than the 0-4 age group. It has been shown that age distributions of younger cohorts are subject to serious age misstatements and possibly omissions in Turkish censuses (SIS, 1995; Shorter and Macura, 1982). It is obvious that the patterns of ratios in Table 3.2 are largely functions of these biases in age data. However, it is also likely that changes detected in the relative sizes of the three age groups are influenced by declines in fertility.

3.2 Ascertainment of the Eligibility of Women

In Turkey, all demographic surveys have been carried out with ever-married samples. Due to cultural and social constraints, it is considered difficult to address questions on fertility and contraceptive use to never-married women. In accordance with demographic conventions, women in the reproductive ages (12 to 49) are designated as eligible for the administration of individual questionnaires. With this approach, women who are identified as never-married in the household questionnaire are assumed to have never given birth, and they are included in the calculation of fertility rates as being so. Therefore, false determination of the eligibility of women, particularly the designation of eligible women as being ineligible may result in the underestimation of the level of fertility.

One common problem in demographic surveys is the exclusion of women from the individual questionnaire by pushing them out of the eligible age range. To detect if this has occurred in the 1993 TDHS, age and sex ratios have been calculated for age groups 45-49 and 50-54, groups immediately below and above the age eligibility boundary of 50 years of exact age. Age ratios are calculated as twice the number of women in the reference age group divided by the sum of women in the adjacent age groups, while sex ratios are calculated by dividing the number of males in the reference age group by the number of women in the same age group. Both ratios are expressed per 100. The results are shown in Table 3.3 for the national total and for regions.

Table 3.3 Household age and sex ratios according to region, 1993 TDHS

	Age ratios (Females)		Sex ratios	
Region	45-49 years	50-54 years	45-49 years	50-54 years
West	79.7	123.3	98.9	78.8
South	73.7	118.5	94.3	80.5
Central	80.8	117.6	102.3	84.3
North	95.9	100.7	95.7	85.7
East	60.5	148.2	123.4	65.6
Total	77.1	123.0	102.1	78.4

The figures in the table provide strong evidence of the exclusion of some eligible women as being ineligible by the transference of their ages from the 45-49 to the 50-54 age group. The low age ratio at age 45-49 and the high ratio at age 50-54 are indicative of out-transference of women, thereby designating them as being ineligible for the individual interview. To some extent, this may be attributed to the heaping of ages of women in their late 40s onto age 50; however, the ratios depart too strongly from 100 to be explained by age heaping alone. The table clearly shows that the exclusion of 45-49 year-old women was widespread and not restricted to certain areas of the country. It was possibly more frequent in the East Region, where the levels of education of women are lower and fertility is known to be highest, so that by out-transferring women, lengthy and difficult interviews are avoided.

Another test of data quality can be carried out by examining the proportions ever-married. If women have been falsely recorded as being never-married, fertility rates will be biased downward due to the

Table 3.4 Proportions ever-married among women age 15-49 in the household schedules, by region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

	1978	1983	1988	1993
	Proportions ever-married			
Region				
West	75.8	73.0	71.5	71.7
South	70.7	68.1	67.7	65.1
Central	75.5	69.2	73.3	69.3
North	74.4	70.6	74.7	70.5
East	76.3	72.0	63.7	62.5
Total	75.0	71.0	70.3	68.3
	Age-standardized proportions			
Region				
West	75.8	72.2	70.2	69.9
South	70.7	69.0	67.3	64.1
Central	75.5	69.1	69.3	67.7
North	74.4	68.5	68.0	66.3
East	76.3	71.6	65.7	66.6
Total	75.0	70.3	68.2	67.3

assumption that never-married women have never given birth and are therefore not interviewed. Table 3.4 shows the proportions ever-married among women in the 1993 TDHS, as well as in previous surveys. The upper panel of the table includes directly calculated proportions from the surveys, while the lower panel includes directly standardized proportions, which were standardized to remove the effect of age distributions (the age distributions of ever-married women in the 1978 TFS have been used as standard populations to standardize the overall proportions separately for the national average and for the five regions).

The figures in the table indicate a decline of about 8 percent in the proportion ever-married among women age 15-49 from 1978 to 1993, which can be expected to have some influence on rates of current fertility. Although declines in the proportions in the West and South Regions follow a plausible trend, there are some unexpected reversals in the Central and North Regions. In these two regions, the proportions obtained in the 1988 TPHS are higher than those in the 1983 TFHS, but again decline to the levels of the latter in the 1993 TDHS. Also, the amount of decline in the proportion ever-married in the East Region from 1983 to 1988 is quite large; the proportion does not change appreciably from 1988 to 1993.

However, when the effects of age distributions are removed, declines in the proportions appear to be more regular, with the possible exception of the East Region, where a noteworthy reversal occurs from 1988 to 1993. On the basis of these comparisons, there is no strong evidence of false reporting of marital status in the Turkish surveys. However, it may be said that if the figures from the 1988 TPHS were excluded from the table, the remaining figures from the other three surveys would provide a more plausible trend in the proportions.

3.3 Completeness of Information on Birth Dates of Respondents

Women interviewed in the 1993 TDHS were asked to provide information on their dates of birth; if they could not provide such information, they were then asked to state their age. Since date of birth can be easily converted into age, and since birth date information provides a more accurate basis of information for fertility estimation, information on month and year of birth is the preferred type of information in demographic surveys.

Table 3.5 shows that some 83 percent of women were able to provide a month and year of birth in the 1993 TDHS. Of the remaining women, a majority supplied both a year of birth and their current age; in such cases, the month of birth was imputed by using robust procedures. Table 3.5 also shows that the completeness of birth date reporting is subject to significant variations in Turkey. The proportion of women providing complete information on date of birth declines to 68 percent in the East Region, while it reaches 89 percent in the West Region. Education also appears to be strongly correlated with knowledge of birth date; while nine out of every 10 women who have at least completed primary school were able to provide

complete information on their birth dates, the figure declines to 68 percent for those who have not completed primary school. It is also apparent from the figures in the table that younger cohorts are more knowledgeable about their dates of birth.

Table 3.5 Percentage of respondents by type of birth date information, according to region, level of education and age, 1993 TDHS

Background characteristics	Birth date information provided			
	Month and year of birth	Month of birth and current age	Year of birth and current age	Current age only
Region				
West	89.0	0.2	10.1	0.6
South	83.6	0.2	15.8	0.5
Central	85.5	0.1	13.5	0.9
North	75.0	0.2	20.1	4.7
East	68.4	0.2	30.2	1.3
Level of education				
No education	67.7	0.2	29.2	2.9
Primary and higher	90.3	0.2	9.3	0.3
Age group				
15-19	87.1	0.2	11.2	1.5
20-24	86.4	0.1	12.8	0.7
25-29	85.8	0.3	12.9	0.9
30-34	83.9	0.0	15.3	0.8
35-39	80.2	0.3	18.1	1.4
40-44	78.3	0.1	20.0	1.6
45-49	76.6	0.3	21.4	1.7
Total	82.7	0.2	16.0	1.2

3.4 Age Reporting by Eligible Women

The fact that most women were able to provide complete information on their dates of birth does not necessarily mean that the information provided is accurate. While it is expected that complete information will permit more accurate estimation of current age, and therefore more accurate estimates of fertility, this may not be the case if the dates of birth provided are imprecise.

Figure 3.3 shows the distribution of eligible women by single years of age. The saw-tooth pattern of the curve is indicative of age misstatement, especially age heaping on ages ending with digits 0 and 5.

Figure 3.4 shows the age distribution of women, divided into two groups by type of information used for the ascertainment of age. For those women who were able to provide the month of birth with either the year of birth or current age, there appears to be less heaping than for those with a missing month of birth. However, there is still evidence of some heaping in the distribution for women providing complete information.

3.5 Completeness of Information on Children's Birth Dates

It is of vital importance that dates of birth of live-born children are obtained as accurately as possible, so that births can be allocated to the correct intervals for accurate estimation of fertility. Table 3.6 shows the completeness of information obtained in the maternal histories regarding children's dates of birth.

Figure 3.3 Distribution of Interviewed Women by Single Years of Age, 1993 TDHS

Figure 3.4 Percent Distribution of Interviewed Women by Single Years of Calculated or Imputed Age and Month of Birth Information Provided, 1993 TDHS

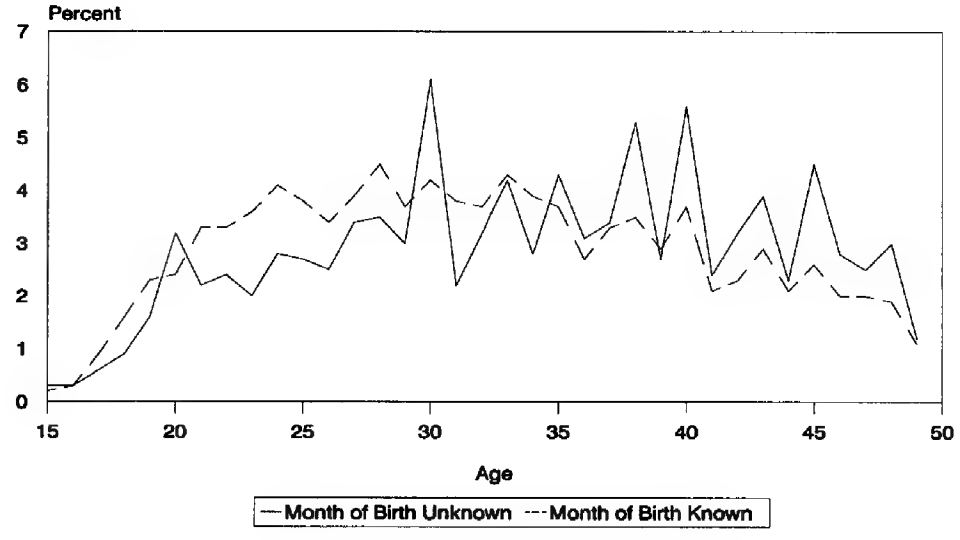


Table 3.6 Percentage of complete information collected on birth dates of children, according to selected background characteristics, 1993 TDHS

Background characteristics	Month and year provided	Incomplete information	Number of children
Region			
West	98.2	1.8	5688
South	98.0	2.0	3096
Central	97.5	2.5	4668
North	92.9	7.1	1851
East	96.6	3.4	4524
Mother's level of education			
No education	95.4	4.6	10042
Primary and higher	99.0	1.0	9785
Mother's age			
15-19	100.0	0.0	177
20-24	99.2	0.8	1387
25-29	99.3	0.7	2705
30-34	98.6	1.4	3966
35-39	97.7	2.3	4176
40-44	94.8	5.2	4070
45-49	94.9	5.1	3347
Number of years since birth occurred			
0-4	100.0	0.0	3762
5-9	98.2	1.8	4413
10-14	97.1	2.9	4505
15-19	95.8	4.2	3666
20+	94.1	6.9	3445
Total	97.1	2.9	19790

Table 3.6 shows that complete information was obtained for a majority of children in the birth histories. Overall, mothers were able to provide complete information on the date of birth for 97 percent of their children. The percentages with complete information are over 92 percent for all subgroups of women considered. These figures are considerably higher than those obtained in previous surveys. For instance, in the 1988 TPHS, complete information on dates of birth was obtained for about 77 percent of children (HIPS, 1989). However, this comparison is slightly misleading due to different procedures used to obtain dates of birth in the two surveys. The use of a demographic calendar in the 1993 TDHS meant that it was compulsory for interviewers to record full information on dates of birth, at least for births occurring in the last five years or so. Therefore, for all those children born within the last five years, complete information was obtained. Nevertheless, even for children born more than 20 years ago, the completeness of information was satisfactory in the 1993 TDHS (94 percent).

3.6 Coverage of Live Births

A common problem in demographic surveys is the sex-selective omission of live births, usually in the form of omission of female births, especially in societies where the value of a daughter is inferior to that of sons. In the 1993 TDHS, as well as in previous surveys, data on all children by date of birth and sex were obtained, as previously mentioned. Such information permits the detection of the existence of sex-selective omission of children, by calculating sex ratios at birth for various time periods preceding the date of interview.

The sex ratio at birth is biologically determined and lies between 103 to 107 male births per 100 female births in nearly all populations. Substantial and consistent departures from these normal values are indicative of sex-selective omission. Table 3.7 shows the sex ratios at birth for children born during 10-year periods preceding the 1993 TDHS. The table also includes the sex ratios at birth for the five regions of the country, so as to determine if any anomalies are attributable to data collected in one section of the country.

Table 3.7 shows that sex ratios for the total population are within acceptable ranges, providing no evidence for sex-selective omission of children. When regions are considered, however, ratios for the two recent 10-year periods appear to be well above expected values in the West Region, and to a lesser extent,

Table 3.7 Sex ratios at birth for 10-year periods preceding the survey, by region, 1993 TDHS

Years prior to the 1993 TDHS	Region					
	West	South	Central	North	East	Total
0-9	111.4	108.9	101.3	100.3	107.5	106.6
10-19	109.7	107.2	104.3	104.2	102.6	105.8
20 +	105.4	105.4	115.6	106.9	99.6	107.2
Total	109.5	107.6	105.2	103.1	104.5	106.4

in the South Region. When all births are considered, the only region for which a higher-than-expected sex ratio at birth is observed is the West Region, where, surprisingly, the overall ratio is high mainly due to the high ratio in the most recent period. It is generally argued that sex-selective omission takes place especially for children born in the distant past, but the figures in the table are not indicative of such a pattern, with the possible exception of the North Region. Table 3.7 also includes sex ratios which are considerably below normal values, as low as 99.6 male births per 100 female births. In general, the ratios fluctuate particularly when regions are considered, which may be due to low numbers of observations and randomness. On the basis of the figures in the table, it is not possible to conclude that sex-selective omission of children was a serious problem in the 1993 TDHS. For instance, adjusting the number of births in the West Region by correcting the sex ratio to 105 would change the number of births in this region by approximately 6 percent.

3.7 Displacement of Birth Dates and Omission of Children

As with the birth dates of respondents, the high proportions of completeness of information on dates of birth of children does not necessarily imply that birth dates have been reported accurately. Neither does it imply that births have not been omitted. Misdating of live births is known to be a common flaw in birth histories and the analysis of fertility trends is critically dependent upon the accurate dating of live births. If misdating/displacement of births has occurred to a serious extent, and/or if children are omitted, fertility estimates can be distorted seriously, and depending on the patterns of displacement and omission, fertility trends may be misleading or fertility levels may be underestimated.

Misdating and omission of live births has been detected in previous Turkish surveys. In a chapter on the evaluation of data obtained in the 1988 TPHS, it was argued that in the three Turkish demographic surveys that are considered (the 1978 TFS, the 1983 TFHS and the 1988 TPHS), significant proportions of births in the five-year periods immediately preceding the surveys were omitted and transferred out of the last five years, leading to the underestimation of fertility during the most recent periods (HIPS, 1989).

In comparison to the 1978, 1983 and 1988 surveys that were considered in the aforementioned analysis, the 1993 TDHS had additional attributes which would increase the likelihood of such biases in the data. For all children born in the last five years or so, interviewers were required to ask a large number of additional questions on mother and child health to the respondents. There is evidence from the DHS-type surveys in other countries that interviewers tend to omit births occurring in the last five years or displace their dates of birth so as to avoid asking additional questions and extending the interviews (Arnold, 1990).

Table 3.8 shows the number of births for calendar years preceding the 1993 TDHS. It is clearly observed from the figures that the 1993 TDHS was not free of omission/displacement problems. There is an excessive number of births in 1987, possibly due to the age heaping, transference of children born in 1988 to avoid asking further questions to respondents, and omission of children under 5 years of age.

Table 3.8 Number of births by calendar year of births prior to the survey, and birth year ratios, according to region, 1993 TDHS

Region	Number of births								Birth year ratios centered on:	
	1993	1992	1991	1990	1989	1988	1987	1986	1988	1987
West	153	207	190	186	212	201	247	231	87.6	114.4
South	85	123	101	122	130	141	128	138	109.3	91.8
Central	132	187	143	184	160	154	218	203	81.5	122.1
North	58	73	71	73	73	57	76	79	76.6	111.8
East	161	182	203	183	188	166	291	243	69.3	142.3
Total	588	771	707	748	762	719	959	893	83.5	118.9

The table provides convincing evidence of out-transference of children born in the last five years preceding the survey, as well as of omission of children born in the last 5 years. Birth year ratios (calculated as twice the number of births in the reference year, divided by the sum of the number of births in the adjacent years, multiplied by 100) centered on 1988 are, for these reasons, considerably lower than 100 and those centered on 1987 are higher than 100. Data problems appear to be most serious in the East Region; while the numbers of births for 1987 and 1986 are above 240, those for later years are lower than 200. The patterns of the numbers of births in the table are not only indicative of out-transference of children, but also of omission of children born in the last five years. With the exception of the South Region, the numbers of births for 1987 and 1986 are much higher than those for years 1988-1992. On the basis of these figures, it is clear that without due consideration of these problems, unadjusted estimates of fertility will be grossly misleading.

Figure 3.5 shows the number of births by single year periods preceding the 1993 TDHS. The heaping on the sixth year preceding the survey is apparent from the figure. The bias that would be caused on fertility rates by heaping can be partly compensated for by calculating rates which include the periods with heaping. However, there is a more serious problem apparent in the figure. There appears to be a deficit of births during the five years preceding the survey, with the exception of the preceding year where the number of births "recover."

This problem in the 1993 TDHS birth histories was detected earlier and it was for this reason that in the main report of the 1993 TDHS, a total period fertility rate for the single year preceding the survey was calculated, rather than the recommended DHS tabulation of 3 or 4 years before the survey (Toros, 1994).

To check if this distorted distribution of births is confined to specific population subgroups, the same figure has been obtained for the birth history data collected in the five regions. Figure 3.6 shows that the problem exists in all regions, but that it is possibly more pronounced in the Central and East Regions than the others. Similar curves produced for urban and rural areas, for education groups and for interview teams (not shown) have also revealed that this unexpected pattern is present for all groups.

Rather interestingly, the same pattern is obtained in the previous surveys as well. It has to be kept in mind that in the 1983 TFHS and 1988 TPHS, as with the 1993 TDHS, further questions were asked to respondents about their children under five, although the amount of such questions was much less. What is more surprising is that in the 1978 TFS, there were very few questions of this sort, which would not warrant a strong tendency on the part of interviewers to omit children or displace their dates of birth. Figure 3.7 shows the number of births for single-year periods before each of the three surveys. The patterns are obviously similar, although one would also tend to note that the U-shapes are less pronounced in the earlier

Figure 3.5 Distribution of Births by Years Preceding the Survey, 1993 TDHS

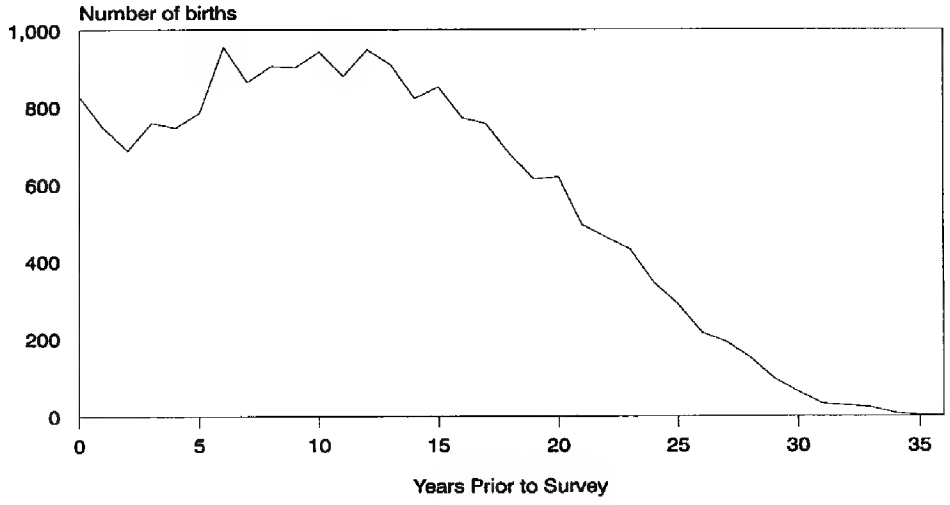
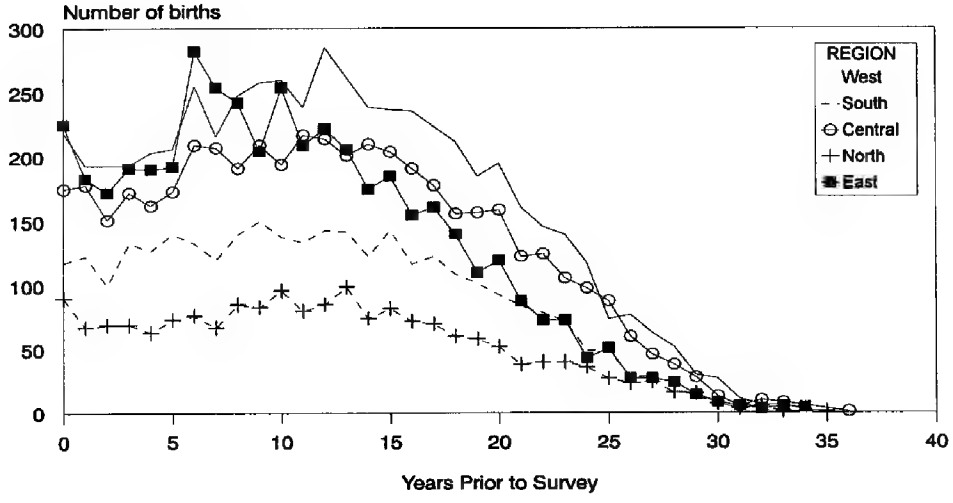
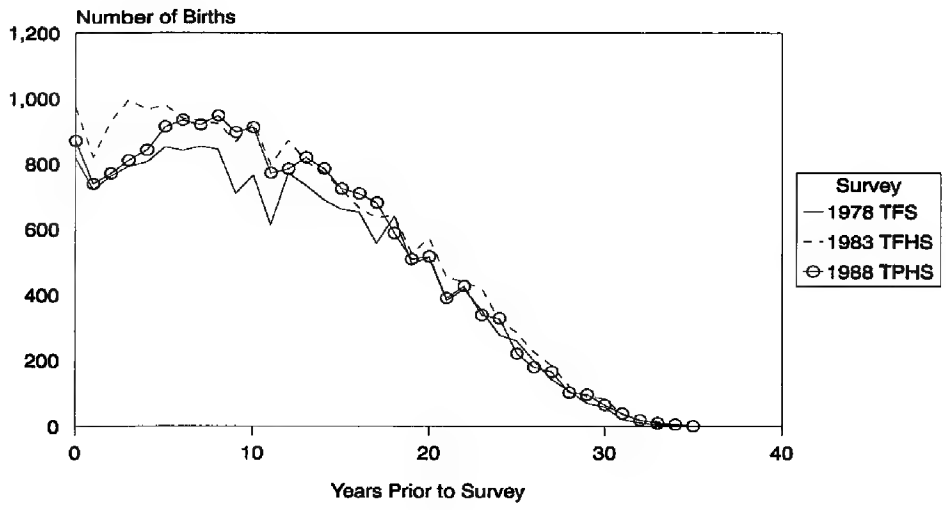


Figure 3.6 Distribution of Births by Years Preceding the Survey, According to Region, 1993 TDHS



surveys. This would happen if the proportion of children omitted/displaced in the later surveys were higher, and/or if fertility was declining rapidly (in which case, the distortions would be exaggerated). Also, the numbers of births are dependent upon the age structure of women exposed to childbearing, which may be changing over time. Therefore, although there is strong evidence that some births have been omitted while some others have been displaced in these surveys, there is need to undertake more standardized analyses of data obtained in birth histories. This can be achieved by calculating fertility rates, thus controlling for the effects of changes in age structure and for the decline in fertility. Such analyses are carried out in the following sections.

Figure 3.7 Distribution of Births by Years Preceding the 1978 TFS, 1983 TFHS, and 1988 TPHS Surveys



4 CHANGES IN THE PROXIMATE DETERMINANTS OF FERTILITY

The 1993 TDHS provides detailed information for the analysis of a number of biological and behavioral factors, through which social, economic and cultural factors come to influence fertility. Contraceptive use and effectiveness, exposure to childbearing through marriage, the duration of postpartum insusceptibility and prevalence of induced abortions are known to be the most important "intermediate" factors which directly inhibit the attainment of maximum levels of fertility. The difference in the observed fertility from a theoretical maximum can be explained by a quantitative assessment of the "levels" of these factors. As discussed in the following sections, several models have been developed which integrate quantitative information on these "proximate" determinants to explain how fertility is controlled, or to analyze components of change in fertility. Therefore, as a prelude to the analysis of fertility levels and trends in Turkey, changes in the proximate determinants are examined in this section, so as to set the context for the analyses to follow. In addition to the aforementioned four most influential proximate determinants, changes in the incidence of sterility is also discussed. For this purpose, data from earlier surveys, particularly the 1978 TFS, are used in addition to data from the 1993 TDHS. However, it must be noted at the outset that the range and detail of information on these determinants from the 1978, 1983 and 1988 surveys is not always fully satisfactory for the researcher hoping to describe these intermediate mechanisms quantitatively.

4.1 Age at Marriage and Proportion Married

The relationship between the level of fertility and the prevalence and timing of marriage is well known. In natural fertility populations (where there is little deliberate effort to control fertility), the timing of entry into marriage and the prevalence and timing of marital dissolutions are direct determinants of the duration of exposure to childbearing; thus, rising age at marriage, for instance, has a lowering effect on the level of fertility (Ross, 1982; Blanc and Rutenberg, 1990).

Previous research has shown that changes in marital status distributions contributed significantly to fertility decline in Turkey. Shorter and Macura (1982) have estimated that from the early 1950s to the mid-1970s, 19 percent of the decline in total fertility could be attributed to changes in marriage patterns. The high proportions of women married and the relatively low age at first marriage when the aforementioned research was carried out meant that there was scope for the influence of changes in marriage patterns on fertility to continue in the following decades.

The universality of marriage in Turkey is well known. By the end of the reproductive years, a small proportion of women remain never-married; since divorce rates are low and the prevalence of widowhood is on the decline due to the improvements in life expectancy in general, reproductive years are predominantly spent within marriage (Koç, 1992). While strong cultural factors reinforce marriage, some "unions" remain unofficial; a significant proportion of marriages are initiated by religious ceremonies, which are not reflected in official statistics. However, since such marriages are widely accepted by the society at large, neither censuses, nor surveys have any difficulty in collecting information on either legal or religious marriages (Hancıoğlu and Ergöçmen, 1992).

One other aspect of marriage in Turkey is the low proportion of males and females marrying at very young ages. The results of the 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS indicate that less than 0.5 percent of females age 10-14 are married (not shown); therefore, integrating this young age group into fertility analyses is unrewarding.

Consequently, the main factor which could influence fertility is the rising age at first marriage, which results in lower proportions of women under the risk of childbearing while passing through ages where fecundity levels are highest. The 1993 TDHS has shown that while the median age at marriage for women age 25-29 was 20 years, it was 18.3 years for women age 45-49 at the time of the survey. These results can roughly be interpreted as indicating a delay in marriage of almost two years within a 20-year period (Ergöçmen, 1994).

The rising age at marriage is reflected in the proportion married among women, which approximates the proportion of women under risk of childbearing at various ages, assuming that extramarital fertility is negligible. Table 4.1 shows these proportions as calculated from the four surveys, for the national total and for regions of the country. The data show that in 1978, 71 percent of women age 15-49 were married, but that this proportion has gradually declined to 66 percent in 1993. Although the proportion married in the East Region is lower than other regions, this is an artifact of different age structures in the five regions, since the age-specific proportions married in this region are higher or similar to those in other regions. (A

Table 4.1 Proportion married among women age 15-49 by age, according to region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

	Age group (years)							
Region and survey	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
West								
1978 TFS	18.1	66.2	88.2	93.3	94.3	91.7	88.1	71.4
1983 TFHS	12.8	63.3	86.1	90.9	92.8	88.2	87.0	69.9
1988 TPHS	12.0	55.7	84.3	91.0	92.8	94.5	89.1	68.8
1993 TDHS	11.0	58.1	81.0	91.7	91.4	87.5	87.9	67.7
South								
1978 TFS	14.1	63.4	88.7	91.3	94.0	92.3	92.2	66.6
1983 TFHS	18.8	54.6	86.1	95.7	90.4	92.0	91.5	65.8
1988 TPHS	14.9	58.4	83.7	91.3	92.3	87.6	91.1	64.9
1993 TDHS	13.0	50.5	76.8	90.7	93.6	90.1	87.4	62.5
Central								
1978 TFS	24.4	73.7	92.1	95.5	96.3	94.3	89.3	71.7
1983 TFHS	17.1	62.4	88.5	95.0	92.4	88.6	85.6	66.9
1988 TPHS	17.8	65.0	86.1	94.3	95.4	93.5	88.0	71.2
1993 TDHS	14.9	60.3	84.6	95.4	93.7	89.9	93.4	67.1
North								
1978 TFS	20.0	79.3	92.4	91.3	97.1	95.8	89.4	70.2
1983 TFHS	15.6	62.6	94.6	97.1	92.5	96.1	92.5	69.1
1988 TPHS	14.8	64.6	92.2	94.9	94.2	89.0	91.6	72.2
1993 TDHS	14.1	58.7	89.1	89.7	96.4	90.6	88.2	67.6
East								
1978 TFS	27.4	80.0	92.3	95.0	94.6	91.1	90.0	72.3
1983 TFHS	23.4	70.3	91.7	95.4	94.0	89.8	85.6	69.5
1988 TPHS	13.2	57.7	86.9	94.8	94.6	91.0	92.2	61.8
1993 TDHS	15.2	59.8	86.0	93.9	95.0	93.1	87.9	60.8
Total								
1978 TFS	21.7	72.1	90.5	93.6	95.2	92.8	89.4	70.9
1993 TDHS	17.3	63.3	88.6	93.9	92.6	89.9	87.7	68.5
1983 TFHS	14.2	59.5	86.0	92.9	93.7	92.2	89.8	67.9
1988 TPHS	13.5	57.7	82.7	92.6	93.2	89.6	89.2	65.5

standardized proportion married for this region in 1993, which is standardized using the age structure embodied in the 1978 TFS, produces a figure of 64 percent). An examination of the proportions by age reveals that for the national total, significant declines have occurred since 1978; the proportion married among women age 15-19 declined by 8 percentage points, while the corresponding figures for the 20-24 and 25-29 age groups were 14 and 8 percentage points, respectively. Table 4.1 shows that similar declines have occurred in all regions. It is also worth noting that insignificant changes have taken place in the proportion married for women over age 30, indicating that most of the change in the proportion married among women in reproductive age groups can be attributed to a rising age at first marriage.

A useful procedure for examining changes in age at first marriage is the construction of life table survivorship curves showing the proportions remaining single at each age, by using data on current age and age at first marriage. These survivorship curves can also be used to calculate life table medians of entry into first marriage. Figure 4.1 shows the survivorship curves for transition to first marriage among women of different cohorts in the 1993 TDHS, on the national level. The curves show the proportion never-married at each age on the x-axis, out of an original cohort of 100 women. The figure indicates that while the entry of the older cohorts (age 35 and over) into marriage was very similar, the experience of the younger cohorts has been quite different. Women in the 15-19 cohort have not yet passed the median age at first marriage by age 20. The points where the curves cross the 50 percent line (the age at which half of women are still never-married) on the X-axis are progressively later for younger age cohorts. A significant departure of the younger age cohorts from the apparently identical experiences of the older cohorts is observed from the figure.

Table 4.2 Proportion of women who were first married by selected exact ages, by age in 1993, 1978 TFS and 1993 TDHS

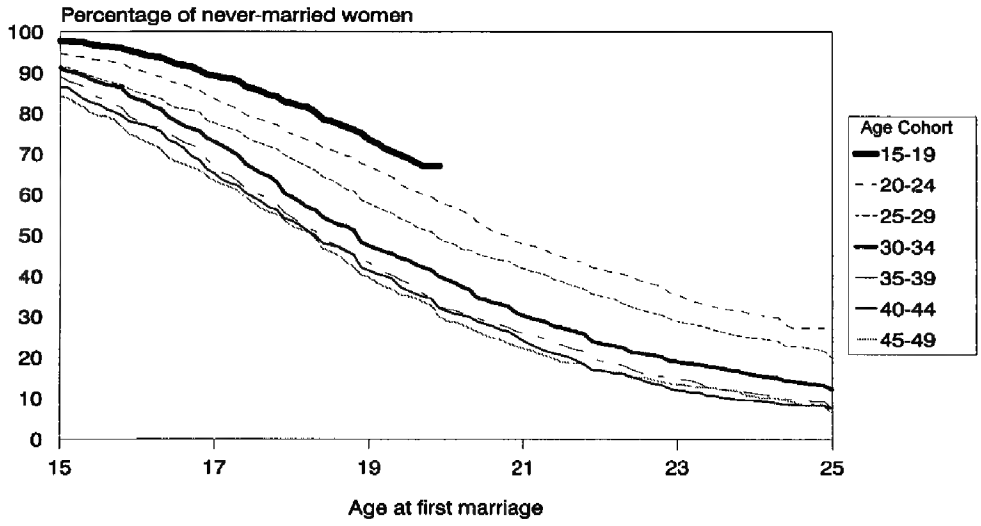
Age in 1993	Survey	Proportion married by exact age: 15	18	20	22	25
15-19	1978 TFS	-	-	-	-	-
	1993 TDHS	1.8	-	-	-	-
20-24	1978 TFS	-	-	-	-	-
	1993 TDHS	4.7	23.3	41.1	-	-
25-29	1978 TFS	-	-	-	-	-
	1993 TDHS	7.5	29.2	49.9	63.7	78.3
30-34	1978 TFS	3.7	-	-	-	-
	1993 TDHS	6.8	38.0	58.8	74.6	86.9
35-39	1978 TFS	9.7	40.5	60.2	-	-
	1993 TDHS	9.1	43.1	66.5	79.3	90.8
40-44	1978 TFS	11.5	46.3	66.8	80.4	89.7
	1993 TDHS	12.0	44.8	66.4	82.1	91.7
45-49	1978 TFS	17.1	52.8	71.4	83.9	93.3
	1993 TDHS	12.9	45.4	67.8	82.0	91.9
50-54	1978 TFS	20.8	60.7	78.4	90.2	96.6
	1993 TDHS	-	-	-	-	-
55-59	1978 TFS	16.8	54.9	74.6	88.3	94.9
	1993 TDHS	-	-	-	-	-
60-64	1978 TFS	15.3	53.8	75.9	87.7	94.6
	1993 TDHS	-	-	-	-	-

Table 4.2 shows the proportion of women who were first married by selected exact ages from the 1978 TFS and 1993 TDHS, indexed by age in 1993. The figures from the two surveys are similar, with the exception of the figures from the oldest age group in the 1993 TDHS, who, possibly due to memory lapse, overstated their age at first marriage. Otherwise, the maximum difference between the figures from the two surveys remains within 5 percentage points of each other, which is reassuring of the quality of data collected in the two surveys regarding age at marriage. The table is indicative of the rapid changes in age at first marriage in Turkey. Of women age 25-29 in 1993, 29 percent had married before age 18, and of women age 25-29 in 1978 (age 40-44 in 1993), the comparable figure was 46 percent. Similarly, of women age 30-34 in 1993, 59 percent had married before age 20, while the comparable figure was 71 percent for women of the same age in 1978 (age 45-49 in 1993).

The findings in this table shed some doubt on the so-called "identical experience of older cohorts" regarding age at first marriage. Previous analyses have shown that the rising trend in age at first marriage was present even in the 1950s (Shorter and Macura, 1982; Berksan, 1969; Hancıoğlu and Ergöçmen, 1992); in other words, it is unlikely that women age 35 and over went through similar experiences in the timing of entry into marriage. Coupled with the findings in Table 4.2, it appears that the curves for the oldest age groups in Figure 4.1 are close to each other due to overstatement of age at first marriage by older women, rather than reflecting stability in the age at first marriage.

Nevertheless, the results in this section indicate that women have been progressively entering marriage at later ages. This strong trend can be expected to contribute significantly to declines in fertility.

Figure 4.1 Percentage of Never-married Women by Age at First Marriage, According to Age Cohorts of Women, 1993 TDHS



4.2 Contraceptive Use and Effectiveness

The Government of Turkey implemented a pronatalist population policy until the mid-1960s. In recognition of heavy losses during the War of Independence, as well as the defense needs of the country, a shortage of manpower, and high mortality rates, a need to increase fertility and population growth was perceived by governments at the time. The pronatalist policy remained in effect until 1965. During the late-1950s, public opinion began to change; intellectuals, bureaucrats and other government officials began to discuss the adverse effects of rapid population growth and the need for avoiding unwanted pregnancies. Findings from a number of small-scale surveys showed that women had to have their pregnancies illegally aborted under unsatisfactory conditions and that this was one of the main causes behind high maternal mortality rates. A principally antinatalist Population Planning Law was enacted in 1965, which legalized contraception and emphasized public education to avoid unwanted pregnancies and limit fertility.

The 1965 law remained in effect until 1983. By then, a military government was in power, which enjoyed the luxury of adopting a stronger antinatalist discourse in the absence of significant opposition. As

a result, the 1965 Population Planning Law was revised into a more liberal and comprehensive document in 1983[1] in which abortions up to the tenth week of pregnancy and voluntary surgical contraception were legalized, midwives were permitted to insert IUDs, and general practitioners were authorized to terminate pregnancies by the menstrual regulation method (MOH et al., 1994).

The change in policy appears to have influenced contraceptive practices in Turkey. Although the exact impact of policies and the provision of family planning services on the changes in the prevalence of contraception remains an area of controversy, it is very likely that the shift from the pronatalist to the antinatalist policy influenced the contraceptive mix, since modern methods were made available to the public with the change of policy. In the early 1960s, only one-fifth of Turkish women (age 15-44) used any type of contraception—only one-quarter of users were using modern methods and a significant majority of traditional method users were users of the withdrawal method (Özbay et al., 1979). By 1978, as shown in Table 4.3, the proportion of users had risen to 38 percent, and the use of modern contraception accounted for one-third of all users. Withdrawal was still the most preferred method.

Table 4.3 Percent distribution of contraceptive use among married women according to method, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Contraceptive use status	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS
Nonusers	62.0	49.0	36.3	37.4
Any method	38.0	51.0	63.7	62.6
Modern method	13.4	22.6	31.3	34.5
Traditional method	24.6	28.4	32.4	28.1
Specific Methods				
Pill	6.1	7.5	6.1	4.9
IUD	3.0	7.4	14.2	18.8
Injectables	0.3	0.2	0.0	0.1
Vaginals	0.3	2.4	1.9	1.2
Condom	3.1	4.1	7.3	6.6
Female sterilisation	0.4	1.1	1.7	2.9
Male sterilisation	0.2	0.0	0.1	0.0
Periodic abstinence	1.0	1.2	3.6	1.0
Withdrawal	16.8	25.0	25.7	26.2
Prolonged abstinence	0.0	0.0	0.1	0.1
Vaginal douche	4.3	1.6	2.5	0.6
Other	2.5	0.7	0.4	0.2

The proportion of users rose from 38 percent in 1978 to 51 percent in 1983, and to 64 percent in 1988. There were significant changes in the contraceptive mix as well; by 1988, modern methods accounted for almost half of all contraceptive use. From 1978 to 1988, there was a linearly increasing trend in contraceptive prevalence. Of the total increase of 26 percentage points, more than 15 percent was due to an increase in use of the IUD, and 9 percent was due to an increase in the use of withdrawal.

In view of the sustained decline in the proportion of nonusers from 1978 to 1988, and the accompanying findings from surveys concerning the equally sustained decline in fertility, the 1993 TDHS was expected to estimate higher prevalence of contraception than the 1988 TPHS, but this did not materialize. The 1993 TDHS produced a contraceptive prevalence estimate of 63 percent; the only notable development was the increase in the proportion of modern method users relative to those using traditional methods. According to the 1993 TDHS, modern methods accounted for 55 percent of all contraceptive use. Table 4.3 shows the estimates of the four surveys regarding the use of specific contraceptive methods.

The available data sets permit the evaluation of the comparability of information on contraceptive use collected in these surveys. It is possible to examine the proportion of ever married women who have ever used contraception from the four surveys, to detect whether the findings of the surveys are consistent. Table 4.4 shows these proportions from the four surveys, indexed by ages of women in 1993. Since ever-use of

[1] It is noteworthy that although the 1965 and 1983 laws were labelled as "Population Planning" laws, both were, in essence, laws that legalized and encouraged family planning, explicitly recognizing the right of couples to choose the number and timing of their children. It appears that law makers did not feel the need to disguise their real intentions of bringing down the population growth rate by increased use of family planning.

contraception is an irreversible attribute, the proportions for each age cohort are expected to increase or remain stable with each survey. Table 4.4 shows that this is indeed the case as cohorts are followed from 1978 to 1988; however, the proportions obtained for women age 35 and over in the 1993 TDHS are lower than the proportions obtained for the same age cohorts five years earlier. This finding can be attributed to an overestimation of contraceptive use in the 1988 TPHS, or alternatively, to an underestimation of contraceptive use in the 1993 TDHS.

Table 4.4 Percentage of ever-married women who have ever used a contraceptive method, by age in 1993, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Age in 1993	Ever-married women who have ever used a contraceptive method			
	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS
15-19	-	-	-	37.6
20-24	-	-	43.3	69.3
25-29	-	37.1	71.3	84.2
30-34	24.1	60.1	85.6	88.1
35-39	49.9	73.5	89.9	86.9
40-44	61.5	79.1	88.5	81.6
45-49	64.4	77.8	84.5	77.2
50-54	63.0	73.4	73.6	-
55-59	59.1	63.0	-	-
60-64	46.4	-	-	-

Additional insight into the comparable quality of the four surveys, and indeed of trends in the use of contraception in Turkey can be gained by studying the trend in contraceptive prevalence by regions. Table 4.5 shows the proportion of married women who were nonusers, users of modern methods, and users of traditional methods at the time of the four surveys, for the national total and for the five major regions. Table 4.5 shows that in 1978, 62 percent of women were not using a method of contraception, and that the proportion had declined to about 37 percent in the 1993 TDHS. As mentioned earlier, the change in contraceptive prevalence from 1988 to 1993 was almost negligible, with the exception that the mix of contraceptive methods used has changed slightly in favor of modern methods. The reason why such an unexpected absence of change in contraceptive behavior was estimated by the surveys becomes clear as trends in contraceptive prevalence are examined separately by regions. Indeed, the regional estimates provide more evidence to the failure of the 1988 TPHS in estimating contraceptive prevalence accurately. While the proportions of nonusers decline regularly in the West and South Regions, the proportions calculated for the East Region appear to be problematic: The estimates for this region imply that contraceptive use had increased dramatically from 1983 to 1988, but then declined from 1988 to 1993. This highly implausible trend in contraceptive use is also observed with a lesser degree in the Central and North Regions. The data suggest that the "unexpected" stability in contraceptive prevalence from 1988 to 1993 could have been due to the overestimation of contraceptive use in the East Region (and possibly, the Central and North Regions) in the 1988 TPHS. Again, if the proportions calculated from the 1988 TPHS are excluded, the remaining three surveys point out a plausible and regular trend in contraceptive prevalence in Turkey for all five regions. The findings in the table indicate that the increase in contraceptive prevalence from 1978 to 1993 had been quite similar in all regions; in 1993, approximately 20 percent more women were using a contraceptive method compared to 1978. Increases in the prevalence of modern contraception also appear to have been similar in all regions, with the exception of the East Region where four times more women were using a modern method in 1993 compared to 1978. The prevalence of modern contraception in the other four regions doubled during the same period.

Another comparative analysis of data on contraceptive use can be undertaken by using the calendar data from the 1993 TDHS. As mentioned earlier, a demographic calendar was used in the 1993 TDHS to record a variety of information on events since January 1988 to the survey date, including episodes of contraceptive use. It is therefore possible to produce estimates of contraceptive use, albeit for women age 15-44, for the year 1988, using data from the 1993 TDHS. Table 4.6 shows the proportion of women age 15-44 using contraception in 1988, directly tabulated from the 1988 TPHS, alongside the reconstructed proportions using the 1993 TDHS calendar data and figures which have been obtained by interpolating the

Table 4.5 Percent distribution of married women by type of contraceptive method used, according to region, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Region and contraceptive use status	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS
West				
No method	46.9	34.6	29.9	28.5
Modern methods	16.8	27.0	35.1	37.3
Traditional methods	36.3	38.4	35.0	34.2
Total	100.0	100.0	100.0	100.0
South				
No method	64.5	53.4	46.9	37.2
Modern methods	13.7	22.1	28.2	36.7
Traditional methods	21.7	24.5	24.9	26.0
Total	100.0	100.0	100.0	100.0
Central				
No method	63.4	48.4	31.8	37.3
Modern methods	15.7	25.2	33.3	36.6
Traditional methods	20.9	26.4	34.8	26.1
Total	100.0	100.0	100.0	100.0
North				
No method	63.1	44.9	34.9	35.8
Modern methods	10.6	21.6	26.0	29.8
Traditional methods	26.3	33.5	39.1	34.4
Total	100.0	100.0	100.0	100.0
East				
No method	81.1	75.9	49.1	57.7
Modern methods	6.5	12.3	26.2	26.3
Traditional methods	12.4	11.9	24.7	16.0
Total	100.0	100.0	100.0	100.0
Total				
No method	62.0	49.0	36.3	37.4
Modern methods	13.4	22.6	31.3	34.5
Traditional methods	24.6	28.4	32.4	28.1
Total	100.0	100.0	100.0	100.0

proportions of current users in the 1983 TFHS and 1993 TDHS.

The results show that compared to both the reconstructed proportions from the 1993 TDHS and the interpolated proportions from the 1983 TFHS and 1993 TDHS, the 1988 TPHS estimates higher contraceptive use among married women age 15-44. The estimates of contraceptive prevalence are especially high in the Central, North and East Regions, where contraceptive prevalence seems to have been overestimated by margins of 10-20 percent. These findings are in accordance with the findings in Table 4.4, where ever-use of contraception was found to be overestimated by the 1988 TPHS. Interestingly, estimates of marriage from the 1988 TPHS were also found to be inconsistent with estimates from other surveys. If the estimates obtained by the reconstruction of contraceptive use from the 1993 TDHS is used to describe the changes in contraceptive use in Turkey, the implied trend is more plausible.

In the following sections, the plausibility of the estimates of the 1988 TPHS are revisited. It should suffice to note here that the 1988 TPHS appears to have overestimated contraceptive use, mainly due to problems in the implementation of the survey in the East, and possibly the Central and North Regions.

The results in this section also imply that increases in contraceptive prevalence in Turkey must have been accompanied by a more effective use of contraception to lower fertility. Since the proportion of modern methods, which are generally more effective than traditional methods, has also increased, contraception should logically account for more in the avoidance of pregnancies than the rise in total contraceptive prevalence alone would imply. In the 1993 TDHS, first-year failure rates of selected contraceptives were calculated by using data from the demographic calendar (Dervişoğlu and Ergör, 1994). The results indicated that among all contraceptive methods considered, the highest failure rates were associated with the use of periodic abstinence (25 percent), while failure rates calculated for the IUD, the pill, and the condom were the lowest (1, 6, and 9 percent, respectively). Estimates obtained from the 1993 TDHS data were found to be quite consistent with general expectations, based on findings from other countries and the demographic/medical literature. The only previous information available on contraceptive effectiveness in

Turkey were failure rates calculated from the 1988 TPHS, but their use is not warranted.[2] In this study, failure rates calculated from the 1993 TDHS for the national total are assumed to have been constant over time and across population groups (Dervişoğlu and Ergör, 1994).[3]

Table 4.6 Percentage of contraceptive use among married women age 15-44 in August 1988, according to region, as tabulated from the 1988 TPHS, reconstructed from the 1993 TDHS and interpolated by using estimates from the 1983 TFHS and 1993 TDHS

Region and source	Contraceptive use status			
	Nonusers	Any method	Modern method	Traditional method
West				
1988 TPHS	26.6	73.4	37.5	35.9
1993 TDHS[1]	36.6	63.4	30.4	33.4
1983 TFHS/1993 TDHS[2]	27.6	72.4	34.7	37.7
South				
1988 TPHS	44.9	55.1	29.0	26.1
1993 TDHS[1]	46.6	53.4	29.3	24.1
1983 TFHS/1993 TDHS[2]	42.8	57.2	31.3	26.3
Central				
1988 TPHS	29.4	70.6	35.2	35.4
1993 TDHS[1]	42.3	57.7	33.7	24.0
1983 TFHS/1993 TDHS[2]	40.8	59.2	32.8	26.6
North				
1988 TPHS	30.7	69.3	28.4	40.8
1993 TDHS[1]	39.1	660.9	27.5	33.4
1983 TFHS/1993 TDHS[2]	37.8	62.2	27.5	34.7
East				
1988 TPHS	47.3	52.7	27.8	24.9
1993 TDHS[1]	68.3	31.7	18.9	12.8
1983 TFHS/1993 TDHS[2]	66.2	33.8	19.9	14.0
Total				
1988 TPHS	33.6	66.4	33.2	33.1
1993 TDHS[1]	44.8	55.2	28.9	26.3
1983 TFHS/1993 TDHS[2]	40.8	59.2	30.4	28.9

[1] Percentages calculated for September 1988, calculated from the calendar data of the 1993 TDHS
[2] Percentages calculated by interpolating the corresponding percentages in the 1983 TFHS and the 1993 TDHS

[2] The 1988 TPHS estimated higher failure rates for all contraceptive methods than did the 1993 TDHS, with the exception of withdrawal and periodic abstinence. The most notable finding was the unexpectedly high failure rate associated with pill use (26 percent). Data on contraceptive effectiveness was collected in the 1988 TPHS by asking women questions as to whether they were using any contraception at the time of pregnancy. Methodologically, the procedure used to obtain information on contraceptive effectiveness was less robust, and as stated in the study that summarized the findings, "....the results should be interpreted with caution and other studies..." were "....necessary to cross-check the reliability of the results" (Kulu-Glasgow et al., 1991).

[3] Analysis of failure rates associated with IUD and withdrawal use have revealed that regional differences are almost negligible (Enünlü and Doğan, 1996). Therefore, assuming that the failure rates for the national average would apply to all five regions and for periods from the 1970s to the 1990s does not appear to be a far-reaching assumption.

4.3 Induced Abortions

As mentioned earlier, induced abortion rates were fairly high in Turkey even before the legislation of 1983. In two surveys conducted in 1968 and 1973, rates of 26 and 27 abortions per 100 live births were estimated (Kişnişçi and Akın, 1978).

The detailed information collected in the demographic calendar of the 1993 TDHS data permits the calculation of abortion rates for the five-year period preceding the survey. In addition to recording each induced abortion in the calendar, information on the total number of abortions for each woman was also collected in the 1993 TDHS, which can be used to calculate the average number of abortions. The latter type of data is also available from the 1978 TFS, the 1983 TFHS and the 1988 TPHS. It is also possible to calculate age-specific abortion rates from the 1978 TFS.[4]

Table 4.7 Average number of induced abortions per woman by age, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS
15-19	0.00	0.00	0.00	0.00
20-24	0.07	0.06	0.08	0.06
25-29	0.24	0.24	0.28	0.25
30-34	0.39	0.47	0.50	0.54
35-39	0.46	0.51	0.79	0.76
40-44	0.43	0.65	0.82	0.86
45-49	0.37	0.53	0.69	0.87

Table 4.7 compares abortion data from the four surveys. The table includes the average number of induced abortions per woman from 1978 to 1993, indexed by age in 1993. As with proportions ever-married, the figures are expected to increase or remain stable over time. The table shows that the expected trend in the averages are observed; there is no strong evidence of problems in the data sets. The figures are indicative of the growing incidence of induced abortions since the late 1970s in Turkey. Women age 40-44 in 1978 had an average number of 0.4 abortions; the corresponding figure from the 1993 TDHS is 0.9, indicating that cohorts have been progressively leaving the reproductive age groups with more abortions. The result is also significant in the sense that, as shown in the following sections, fertility rates have been declining during the same period; therefore a more rapid increase in the ratio of induced abortions to live births can be expected to have taken place in recent years.

Table 4.8 Total abortion rates by region, 1978 TFS and 1993 TDHS

Region	1978 TFS	1993 TDHS
West	0.75	0.84
South	0.38	0.68
Central	1.04	0.86
North	0.69	0.79
East	0.39	0.58
Total	0.69	0.77

Table 4.8 displays single-year total abortion rates estimated from the 1978 TFS and five-year abortion rates from the 1993 TDHS (approximately referring to early 1991). The data show that during the period under consideration, the rate increased from 0.69 abortions per woman to 0.77, an increase of about 10 percent. It appears that the rates in all regions increased during this 15 year period; the largest amount of increase was obtained in the South Region. It is interesting to note that the ranking of the regions in terms of abortion rates did not

[4]Although the 1983 TFHS and the 1988 TPHS incorporated full pregnancy histories and therefore full information on the timing of all terminations, the data sets available at the time of this study were of poor quality in this respect and abortion rates could not be calculated.

Abortion data from the 1978 TFS also had its shortcomings. In the recoded data files of the 1978 TFS, information only on the timing of the last induced abortion is present. An exercise carried out on the data from the 1993 TDHS has shown that the incidence of multiple induced abortions in 12-month periods is low; the difference between the total abortion rate based on the last abortion and the conventional rate was only 0.02 abortions per woman, which means that using information on the last abortion is not likely to underestimate the total abortion rate significantly.

change significantly—as in 1978, the highest abortion rates are in the Central and West Regions, followed by the North Region. It is also noteworthy that the total induced abortion rate appears to have declined slightly in the Central Region.

4.4 Postpartum Infecundability

Another proximate determinant of fertility is the duration of postpartum infecundability (insusceptibility), which refers to the duration after a birth or an abortion during which women are not exposed to the risk of conception. Insusceptibility can be due to postpartum abstinence from sexual relations and/or postpartum amenorrhea, which is primarily determined by the length of breastfeeding. The longer the average durations of postpartum insusceptibility, the longer women spend time protected from conception; at the population level, long average durations of postpartum insusceptibility have a lowering effect on fertility.

In the 1993 TDHS, information was collected on both postpartum amenorrhea and postpartum abstinence, making possible the estimation of the duration of postpartum insusceptibility. For the national total, the median duration of postpartum amenorrhea was calculated as 3.7 months, while the mean duration of postpartum abstinence was calculated as 1.9 months. The median duration of postpartum insusceptibility was estimated as 4.0 months, indicating that the major determinant of the duration of postpartum insusceptibility in Turkey is postpartum amenorrhea (Ergöçmen, 1994).

The 1993 TDHS results confirmed the association of the duration of breastfeeding with that of postpartum amenorrhea and postpartum insusceptibility. In the North Region where the median duration of breastfeeding was lowest (7.5 months), the median durations of postpartum amenorrhea and postpartum insusceptibility were also the lowest (2.8 and 3.2 months, respectively). The longest durations for all three indicators were calculated for the East Region (Ergöçmen, 1994; Tunçbilek, 1994).

There is information showing that since 1978, little has changed in terms of the duration of breastfeeding in Turkey. The mean duration of breastfeeding was calculated as 14.3 months from the 1978 TFS, implying that during the 15-year period from 1978 to 1993, the mean duration of breastfeeding had declined by only a month to 13.3 (World Fertility Survey, 1984; Tunçbilek, 1994). A decline in the breastfeeding duration of one month is unlikely to have caused a significant decline in the duration of postpartum insusceptibility; also, postpartum abstinence, the other determinant of the postpartum insusceptibility, is unlikely to have changed considerably in a matter of 15 years, since it is closely linked with deep-rooted social customs. Accordingly, it appears to be safe to assume that the median duration of postpartum insusceptibility declined by one month from 1978 to 1993.

4.5 Sterility

A final proximate determinant of fertility considered here is sterility. Some women remain childless until the end of their reproductive years although they may be married/in union (sexually active) and "exposed" to the risk of childbearing. The high incidence of sterility among women may result in lower fertility rates than would be expected. In some African countries, the incidence of sterility is relatively high, making it an effective determinant of the level of fertility. In general, it is assumed that the fertility inhibiting effect of sterility is significantly lower, compared to other factors considered in this section. However, indirect data on sterility, in the form of the proportion of childless women at the end of their

Table 4.9 Percentage of childless women age 40-49, according to region, 1978 TFS and 1993 TDHS

Region	1978 TFS	1993 TDHS
West	3.0	1.6
South	0.8	2.2
Central	1.8	2.4
North	0.8	2.3
East	2.6	1.4
Total	2.1	1.9

reproductive years[5] is easy to obtain and therefore considered here. Table 4.9 shows the proportion of childless women age 40-49, calculated from the 1978 TFS and 1993 TDHS.

The data show that sterility is not a major fertility inhibiting variable in Turkey. While the proportions for the national total estimated from the 1978 TFS and 1993 TDHS are approximately 2 percent, those for the regions range between 0.8 and 3 percent. These findings indicate that sterility is not expected to influence fertility significantly, and that there is little variation between the regions of the country.

5 LEVELS AND TRENDS IN FERTILITY

Until the early 1960s, demographers relied on indirect estimates from census data to describe the levels and trends in Turkish fertility. Nevertheless, despite the obvious shortcomings of the available census data, several researchers have published similar estimates of trends in fertility covering the period from the 1920s to the 1950s, showing that total fertility rates first increased from about 5.5 children per woman to 7.0, and then fluctuated between 6.5 and 7.0 (Demeny and Shorter, 1968; Shorter and Macura, 1982; Toros, 1992; SIS, 1995). With the completion of this first stage of the "Turkish fertility transition," a permanent decline in fertility began in the 1950s, at a time when the pronatalist policies were still in effect.

When the antinatalist legislation of 1965 was introduced, the total fertility rate had already fallen below 6 children; in the early 1970s, it was back to its initial level of the early 1920s (about 5.5 children per woman). In the meantime, a noteworthy development was the advent of national demographic surveys in the early 1960s. The earliest of the surveys considered in this study, the 1978 TFS, produced a single-year total fertility rate of 4.3 children per woman, while the 1983 TFHS estimate was 4.0, the 1988 TPHS estimate was 3.1, and the 1993 TDHS estimate was 2.7.

However, the direct estimates from the surveys, with the exception of the 1993 TDHS, were later adjusted by a preliminary comparative evaluation of the data[6] (HIPS, 1989). The adjustment procedure was carried out by using the cohort-period fertility rates pertinent to the whole country; rates for the most recent five-year periods from each of the surveys were ignored and the rates that were closest to each other were averaged. After this was done, fertility rates for the five-year periods immediately preceding the surveys were estimated by fitting a regression line to the averages obtained to the so-called internally consistent rates. The "best" estimates of fertility were 4.9, 4.2 and 3.4 children per woman for the five-year periods preceding the 1978 TFS, the 1983 TFHS, and the 1988 TPHS. These new estimates adjusted the directly calculated fertility rates from these surveys upward by about 7 percent for the 1978 TFS and 13 percent for the 1988 TPHS. The directly calculated rate from the 1983 TFHS was left unadjusted. In short, the adjustment procedure assumed that the fertility rates estimated by each survey for five-year periods were approximately correct, with the exception of the most recent periods (and possibly rates for the earliest periods), and

[5]The proportion of childless women is calculated as the number of childless women age 40-49 who were married before age 30 and were still married at the time of survey, divided by the total number of women in the same age group.

[6] The evaluation was carried out by S.O. Rutstein and included in the main report of the 1988 TPHS.

estimated the rates for periods immediately preceding each survey by extrapolating the averaged rates calculated for periods 5 years and earlier.

The adjustment procedure was adopted largely on the basis of observations on the distributions of the numbers of births from each of the surveys, which had revealed that, as shown for the 1993 TDHS in the section on data quality, sudden declines were observed for the numbers of births occurring in the five-year periods immediately preceding the surveys. It is noteworthy that if the trend of fertility rates was extrapolated linearly in the 1988 TPHS report to the year 1993, a total fertility rate of 2.6 would be obtained, which is quite close to the directly estimated rate of 2.7 from the 1993 TDHS.

Based on the problems detected in survey data in the earlier sections, and the evidence presented in the 1988 TPHS report, it is appropriate to recognize at the outset that analysis of Turkish fertility trends from sample surveys is not a straightforward task. For this reason, several approaches have been adopted in this chapter to produce fertility estimates for Turkey, which would be more reliable than the direct estimates from the surveys. Among the different approaches used for detecting errors in the data and modifying survey estimates are the analysis of cohort-period fertility rates and age-period fertility rates, and the use of the Bongaarts' proximate determinants model.

5.1 Cohort-period Fertility Rates[7]

Table 5.1 shows five-year cohort fertility rates for Turkey, according to five-year periods calculated from the 1978 TFS, the 1983 TFHS, the 1988 TPHS, and the 1993 TDHS. Calculations are based on age cohorts rather than birth cohorts. Since all four surveys were carried out during approximately the same months of the respective years, each age cohort in a survey (with the exception of those who fall out of the reproductive age groups) can be identified as being five years older in the next survey, thereby making possible the description of the progress of each cohort every five years. Also, time periods line up more or less exactly without having to adjust the periods to correspond to each other. Nevertheless, the periods are shown with calendar years for convenience. Each year in the table refers approximately to the month of September.

Comparing rates obtained from the four surveys reveals the problematic nature of birth history data in Turkey. There are a number of peculiarities that can be easily detected. Rates obtained for five-year periods immediately preceding each survey are, as mentioned earlier, too low on the basis of trends implied by estimates for earlier periods, and more importantly, based on estimates obtained for the same periods from surveys carried out later (in which case estimates from the later surveys do not refer to the five-year period immediately preceding that survey, but rather for 5-9, 10-14 or 15-19 years preceding). For instance, if the rates obtained for the 15-19 age group (also shown in Figure 5.1) were examined, the cohort-period fertility rate obtained from the 1978 TFS for the most recent five-year period (approximately September 1973 to September 1978) would be 29 per 1,000, which is considerably lower than the estimates obtained from the other three surveys for the same period, calculated as 42, 46 and 44 per 1,000. On the other hand, the rate for the period 5-9 years preceding the 1978 TFS (1968-73) is 60 per 1,000, which is slightly higher than the rates obtained from other surveys for the same period (52, 45 and 46 per 1,000). The similarity of the curves obtained for each of the four surveys is striking—a rapid decline of fertility is implied during the most recent period, while rates obtained for periods in the distant past are too low, resulting in inverse-U or inverse-J shaped curves. Typically, such curves are indicative of omissions of early births by older women, of omissions and/or misplacement of recent births into the period 5-9 years (and perhaps the misplacement of

[7] For a discussion of cohort-period fertility rates, see Goldman and Hobcraft (1982) and Hobcraft et al. (1982). An earlier analysis of cohort-period fertility rates in Turkey can be found in HIPS (1989).

Table 5.1 Cohort-period fertility rates (per 1,000), 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age	Survey	Period (actual year)									
		88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978 TFS				29	60	54	72	81	64	37
	1983 TFHS			23	42	52	52	69	56	50	
	1988 TPHS		17	33	46	45	46	41	41		
	1993 TDHS	14	30	44	44	46	45	44			
20-24	1978 TFS				204	249	264	218	259	232	
	1983 TFHS			176	228	246	254	262	232		
	1988 TPHS		141	195	208	218	218	194			
	1993 TDHS	126	169	212	245	227	215				
25-29	1978 TFS				250	293	328	337	354		
	1983 TFHS			246	287	291	307	327			
	1988 TPHS		186	246	270	289	292				
	1993 TDHS	163	219	258	283	313					
30-34	1978 TFS				200	245	267	297			
	1983 TFHS			196	217	244	247				
	1988 TPHS		135	180	201	239					
	1993 TDHS	116	151	198	220						
35-39	1978 TFS				134	172	202				
	1983 TFHS			118	136	176					
	1988 TPHS		78	107	127						
	1993 TDHS	62	100	128							
40-44	1978 TFS				70	103					
	1983 TFHS			52	74						
	1988 TPHS		34	60							
	1993 TDHS	29	49								
45-49	1978 TFS				26						
	1983 TFHS			23							
	1988 TPHS		12								
	1993 TDHS	7									

births occurring in the 5-9 year period to the 10-14 period) preceding the surveys. Such patterns have been observed in maternity history data from other countries (Goldman and Hobcraft, 1982; Hobcraft and Rodriguez, 1982). The consequence is an overstatement of recent declines in fertility, while fertility rates in the distant past are underestimated.

When the rates for women age 25-29 are considered, the shapes of the curves persist, albeit in a less pronounced fashion, and the agreement between the curves is better (Figure 5.2). One striking feature of this figure is the low rates obtained from the 1988 TPHS, and the relatively higher rates obtained from the 1993 TDHS.

When cohort-period rates are cumulated to exact ages, the problematic nature of fertility rates becomes more evident. Table 5.2 shows the cumulative period fertility rates from the four surveys; Figure 5.3 shows period fertility rates cumulated to age 35. For the 1978 TFS, a regularly declining trend in fertility is observed, with the exception of the last period (1973-78), which suggests a sudden reduction in fertility.

Figure 5.1 Cohort-period Fertility Rates for the Age Group 15-19, 1978-1993

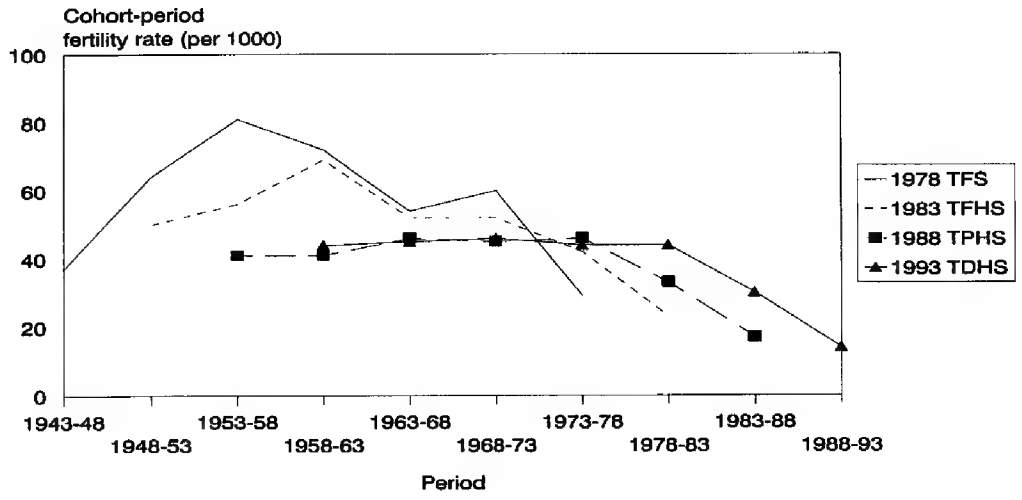
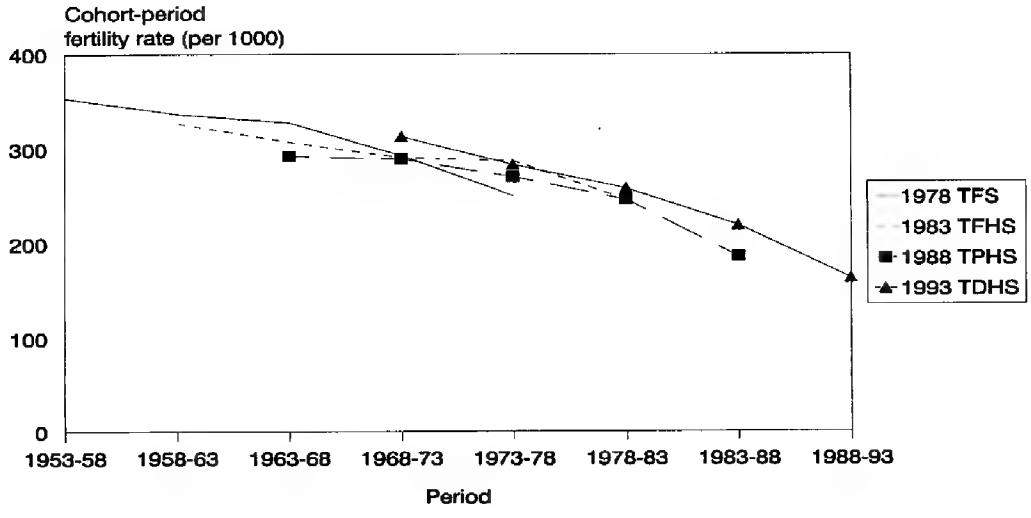


Figure 5.2 Cohort-period Fertility Rates for the Age Group 25-29, 1978-1993



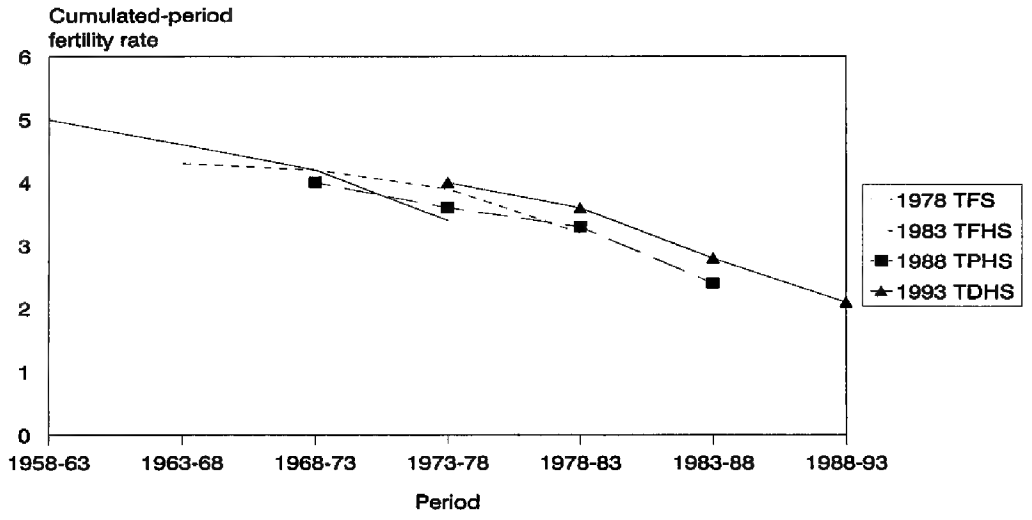
This data point is not confirmed by the 1983 TFHS and 1993 TDHS estimates for the same period, which indicate higher levels of fertility. However, the sudden reduction in fertility in the latest five-year period (the 1978-83 period) is also implied by the 1983 TFHS; the same overall pattern with the 1978 TFS is produced by fertility rates calculated from the 1983 TFHS.

On the other hand, although the 1988 TPHS estimates reveal the same pattern, this survey estimates lower fertility for all periods, which is not surprising on the basis of problems in the data from this survey as discussed in previous sections. Finally, the fertility rate for 15-19 years preceding the 1993 TDHS is comparable with the rate for the same period estimated from the 1983 TFHS. Additionally, the estimate for the 10-14 years preceding the survey appears to continue the trend implied by earlier data points. However, the rates estimated from the 1993 TDHS for the last two five-year periods imply a faster decline in fertility. In other words, the sudden reduction in fertility does not only appear for the last five-year period, but for the period 5-9 years preceding the 1993 TDHS as well.

Table 5.2 Cumulative-period fertility rates, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

		Period (actual year)									
Age	Survey	88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978 TFS				0.1	0.3	0.3	0.4	0.4	0.3	0.2
	1983 TFHS			0.1	0.2	0.3	0.3	0.3	0.3	0.3	
	1988 TPHS		0.1	0.2	0.2	0.2	0.2	0.2	0.2		
	1993 TDHS	0.1	0.1	0.2	0.2	0.2	0.2	0.2			
20-24	1978 TFS				1.2	1.5	1.6	1.8	1.7	1.5	
	1983 TFHS			1.0	1.4	1.5	1.5	1.7	1.4		
	1988 TPHS		0.8	1.1	1.3	1.3	1.3	1.2			
	1993 TDHS	0.7	1.0	1.3	1.4	1.4	1.3				
25-29	1978 TFS				2.4	3.0	3.2	3.5	3.5		
	1983 TFHS			2.2	2.8	2.9	3.1	3.3			
	1988 TPHS		1.7	2.4	2.6	2.8	2.8				
	1993 TDHS	1.5	2.1	2.6	2.9	2.9					
30-34	1978 TFS				3.4	4.2	4.6	5.0			
	1983 TFHS			3.2	3.9	4.2	4.3				
	1988 TPHS		2.4	3.3	3.6	4.0					
	1993 TDHS	2.1	2.8	3.6	4.0						
35-39	1978 TFS				4.1	5.1	5.6				
	1983 TFHS			3.8	4.5	5.0					
	1988 TPHS		2.8	3.8	4.3						
	1993 TDHS	2.4	3.3	4.2							
40-44	1978 TFS				4.4	5.6					
	1983 TFHS			4.1	4.9						
	1988 TPHS		3.0	4.1							
	1993 TDHS	2.5	3.6								
45-49	1978 TFS				4.6						
	1983 TFHS			4.2							
	1988 TPHS		3.0								
	1993 TDHS	2.6									

Figure 5.3 Cumulated-period Fertility Rates to Age 35, 1978-1993



It is possible that the distortions in the cohort-period fertility rates may have been caused by data obtained from one or more subgroups of the population. In Figures 5.4 to 5.8, period fertility rates cumulated to age 35 are shown graphically for the five major regions of the country (Tables including regional cohort-period fertility rates and cumulative period fertility rates are presented in Appendix A). Regional differences are important in Turkey in all spheres of life, including educational levels, cultural characteristics, economic development and indeed demographic indicators. Also, survey samples are selected by using regions as sampling strata and fieldwork for the surveys are usually organized in a region-based fashion, therefore, region-based analyses are appropriate for identifying variations in data quality. Data problems originating from both the respondents and the interviewers are likely to be reflected in comparisons based on regions.

Comparing sets of cumulated fertility rates from the five regions provides better insight into the problems in fertility data. Firstly, the figures reveal that none of the regions are free of problems already discussed for the national total. However, the degree and pattern of the inconsistencies vary across regions.

For the West Region, the 1993 TDHS produces higher estimates of fertility during periods for which comparable estimates from other surveys are available. However, the estimates from this survey reveal a rapid decline in fertility during the 10 years immediately preceding it. For both the 1978 TFS and 1988 TPHS, rates for the last five-year periods are too low. The 1983 TFHS produces a regular declining trend in fertility; however, although the level of fertility implied by this survey is broadly comparable to that from the 1978 TFS, a low level of fertility is implied compared to the estimates of the 1993 TDHS. The pattern observed in the 1993 TDHS estimates could be due to a number of reasons, ranging from migration of women to this region from other high fertility regions, and backward displacement of children's birth dates (exaggeration of age in the case of living children).

Figure 5.4 Cumulated-period Fertility Rates to Age 35, West Region, 1978-1993

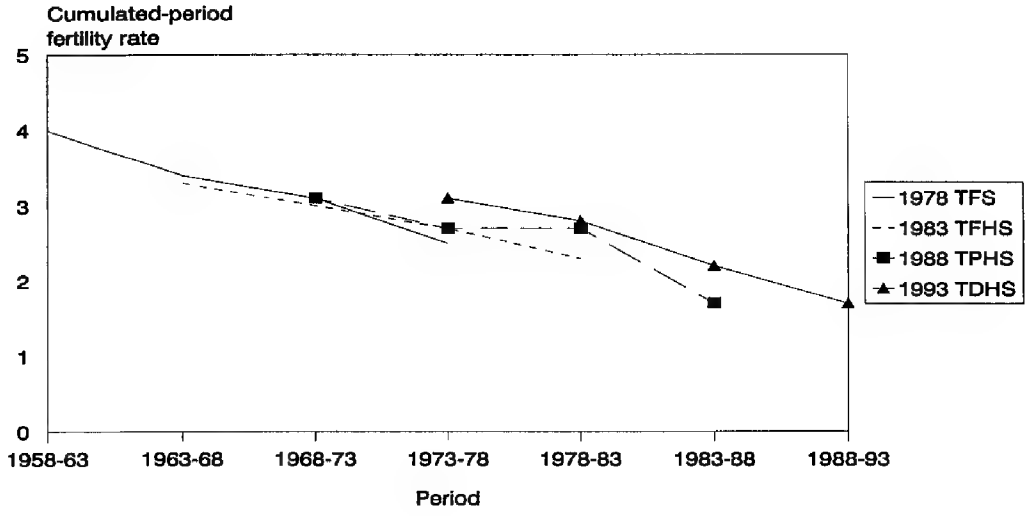


Figure 5.5 Cumulated-period Fertility Rates to Age 35, South Region, 1978-1993

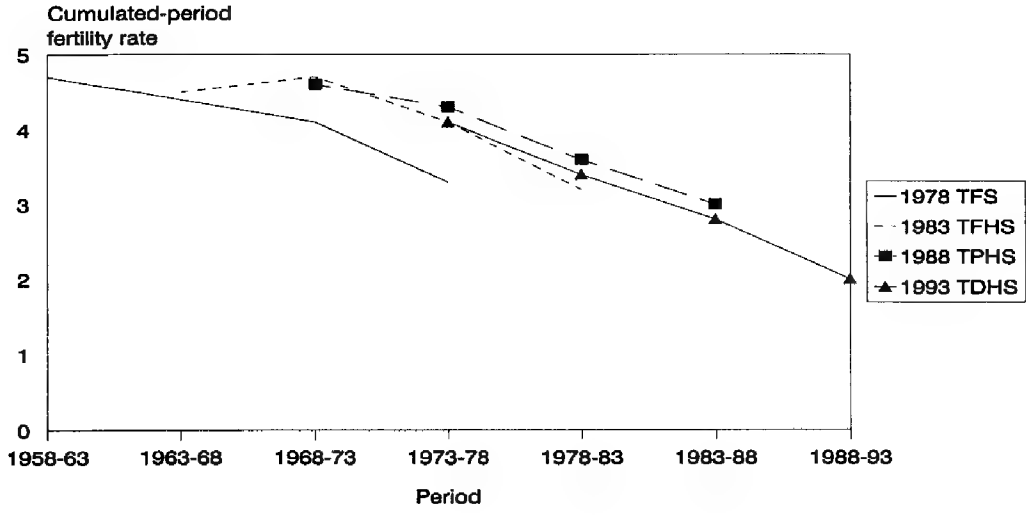


Figure 5.6 Cumulated-period Fertility Rates to Age 35, Central Region, 1978-1993

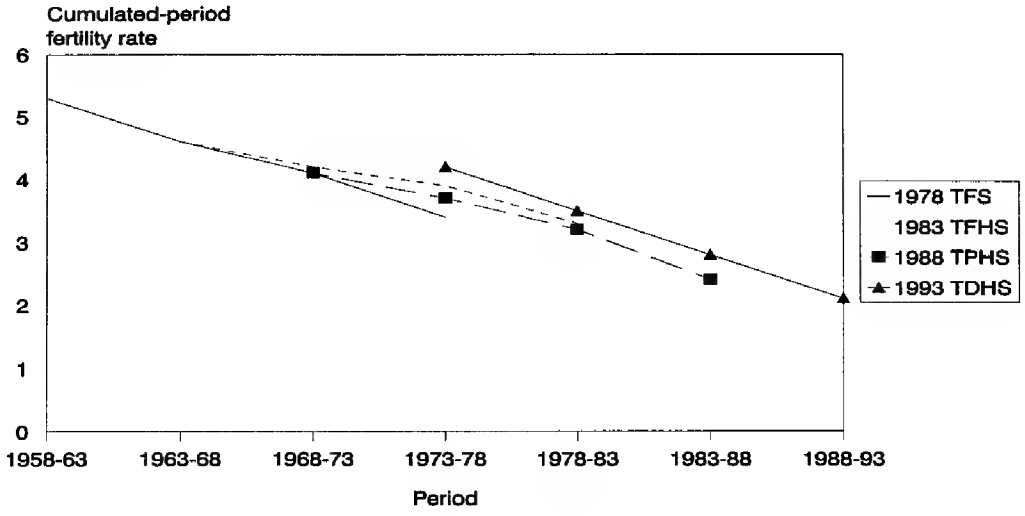


Figure 5.7 Cumulated-period Fertility Rates to Age 35, North Region, 1978-1993

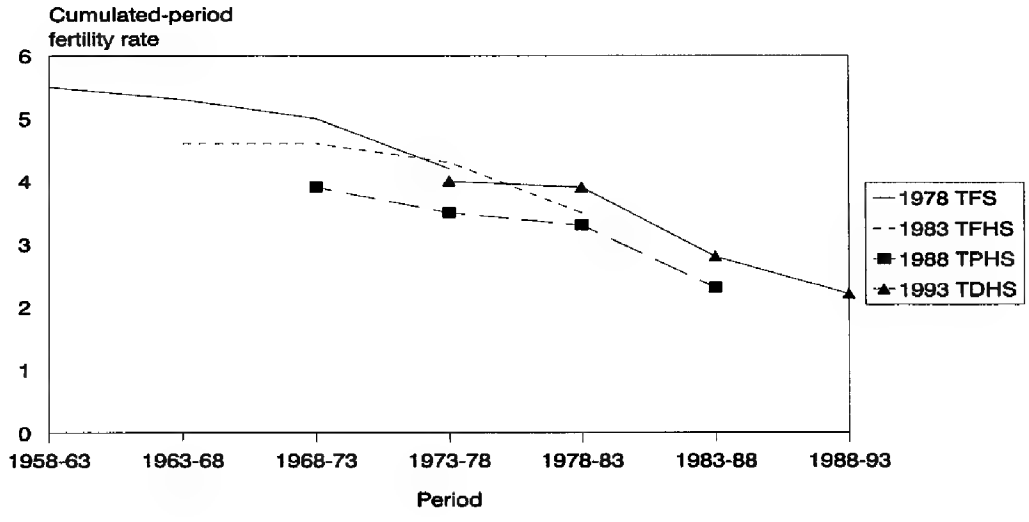
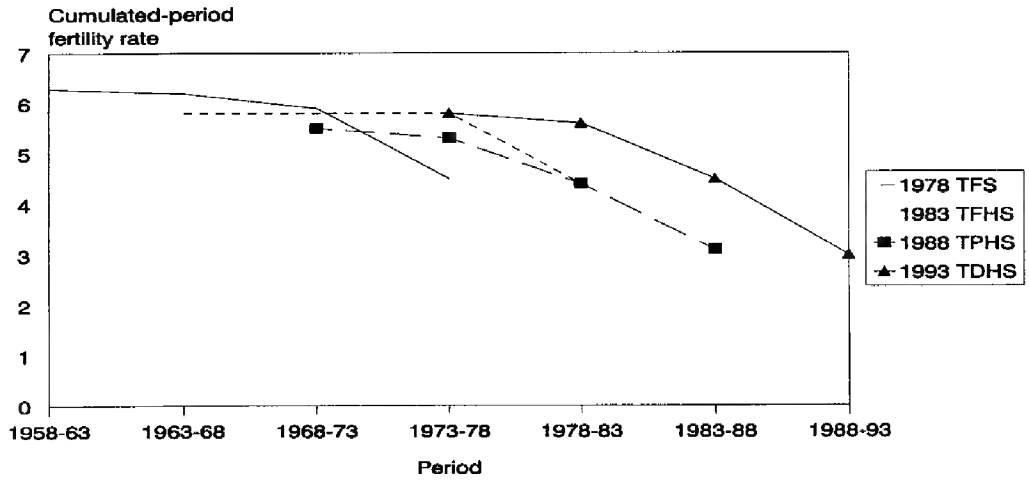


Figure 5.8 Cumulated-period Fertility Rates to Age 35, East Region, 1978-1993



The 1978 TFS estimates for the South Region are clearly too low, implying that there may have been problems in the conduct of the 1978 TFS in this region, and/or perhaps sampling problems. The other three surveys produce similar fertility rates for periods later than 1973-78, with only indications of slight declines in fertility in periods immediately preceding the 1993 TDHS and the 1983 TFHS.

Figure 5.6 shows that the fertility estimates from the 1993 TDHS for the Central Region are higher than those from other surveys, similar to the West Region. It is noteworthy that this region has also attracted migration from the North and East Regions, where fertility is known to have been higher in the past. Estimates for the last five-year periods preceding each of the surveys appear to be lower than expected.

Fertility estimates for the North Region are more anomalous than those for the three regions already discussed. It is very likely that there were problems in the conduct of the 1988 TPHS in this region, since the fertility estimates are implausibly low for all periods. On the other hand, curves from the 1978 TFS and 1983 TFHS show similar patterns, in the sense that both imply sudden reductions in fertility in the last five-year periods preceding them. A sudden decline in fertility from the 10-14 to the 5-9 period preceding the 1993 TDHS is implied by the findings.

The most problematic figure of all is that for the East Region, where women and men are least educated, the level of economic development is lowest and where, especially in recent years, conducting fieldwork can be considered rather risky due to political unrest and terrorist activities.[8] Therefore, it comes

[8] Generally, conducting fieldwork in the East Region of the country poses a number of organizational and logistic problems to the researchers. Selecting interviewers to work in the East Region is difficult; most applicants state a strong preference to work in other regions rather than take (perceived) risks and work in below par conditions in the East Region. In the 1993 TDHS, for instance, interviewing teams were required to leave the sample clusters before it was dark, because of the possibility of running into problems with terrorist groups in the night time. This must have put pressure on interviewing teams to complete work in sample clusters in rural areas which are far from the city centers, and may have reinforced interviewers to omit/displace children so as to complete interviews early.

as no surprise that the quality of data obtained from this region appears to be worse than the others. The sudden declines implied by the estimates for the most recent periods are far too pronounced and not confirmed by other surveys; the differences between such estimates and those from the subsequent surveys for the same periods are quite large; fertility rates declined far too rapidly not only during the last five years, but for the 10 years preceding the surveys (especially the 1988 TPHS and 1993 TDHS). Based on the figure, it is obvious that it would be naive to take the directly estimated fertility rates at their face value. Again, as with the North Region, the 1988 TPHS produces implausibly low estimates of fertility for all periods.

By combining the findings in this section with those in the previous sections, a number of tentative conclusions can be drawn. The 1988 TPHS appears to produce lower-than-expected fertility estimates in most cases. Indeed, the cumulated fertility rates from this survey are consistently below those calculated from the other three surveys. Having discussed problems in regard to data on marriage and contraceptive use from this survey, it becomes obvious that the 1988 TPHS data should be used with caution. Additionally, the 1978 TFS produces implausibly low fertility estimates for the South Region. These observations indicate that the quality of surveys may have been affected by the conduct of fieldwork and/or sampling in different regions in different surveys.

The figures show that the omission/displacement of children born in the last five years preceding the surveys is not the only problem with data. Unfortunately, there appear to be other problems, which, in fact, show that an exercise similar to that carried out in the 1988 TPHS, namely ignoring the estimates for the last five-year periods and fitting a regression line to the remaining fertility estimates, would produce misleading results. First of all, the figures show that fertility rates for some regions from the 1978 TFS (the South Region) and 1988 TPHS (the North and East Regions) should be totally discarded. Second, the figures show that estimates from the 1993 TDHS are generally higher than those of other surveys for comparable time periods. A major problem is that estimates for the last two periods immediately preceding the 1993 TDHS cannot be compared with estimates from other surveys, and imply rapid reductions in fertility. This may be caused by a number of factors. It can be due to the omission of children born in the last 10 years, and/or exaggeration of the ages of children (displacement of birth dates into earlier periods); more importantly, these biases may have been combined with a genuinely faster declining trend in fertility. If an adjustment procedure similar to that in the 1988 TPHS report were carried out, fertility estimates for the last period under consideration (i.e., 1988-93) would be too low. Without any external/alternative information, such an adjustment would not be warranted.

The only plausible conclusion that can be drawn from the analysis of cohort-period fertility rates are estimates for slightly earlier periods, for which the surveys appear to produce relatively consistent estimates. Based on this observation, adjustment of fertility rates for the 1973-78 and 1978-83 periods has been carried out for the five regions. For these periods, cohort-period fertility rates that were closest to each other were averaged. In doing so, estimates from those surveys which indicate lower fertility for all periods (for instance, the fertility estimates for the South Region in the 1978 TFS), together with estimates for the five-year periods immediately preceding the surveys and estimates for the earliest periods were ignored. The regional estimates thus obtained were then weighted by the number of women in each region and aggregated to estimate the rates for the national total. Table 5.3 shows the adjusted total fertility rates. The table also includes direct estimates from the 1983 and 1978 surveys for the corresponding periods. The comparison of the adjusted rates with the direct estimates provides information on the extent of underestimation of fertility by the 1978 TFS and the 1983 TFHS for five-year periods immediately preceding them.

Table 5.3 Adjusted estimates of period fertility rates according to region, for the 1973-78 and 1978-83 periods

Region	Fertility rates, 1973-78			Fertility rates, 1978-83		
	Adjusted estimate (1)	1978 TFS estimate (2)	Difference (1)-(2)	Adjusted estimate (1)	1983 TFHS estimate (2)	Difference (1)-(2)
West	3.4	3.1	0.3	3.3	2.9	0.4
South	6.1	4.5	1.6	5.1	4.4	0.7
Central	5.0	4.4	0.6	4.2	4.2	0.0
North	5.5	5.8	-0.3	4.5	4.3	0.2
East	8.2	6.7	1.5	8.0	6.6	1.4
Total	5.3	4.6	0.7	4.7	4.2	0.5

The adjusted total fertility estimates for the 1978-83 and 1973-78 periods are 4.7 and 5.3 children per woman, respectively. These rates are 12 and 16 percent higher than the direct estimates of the 1978 TFS and 1983 TFHS for the same periods, indicating that the 1978 TFS underestimated fertility in the last five-year period by 14 percent and the 1983 TFHS underestimated fertility by 11 percent.

The largest differences between the adjusted rates and the directly calculated rates are observed for the East Region in both surveys, and for the South Region in the 1978 TFS (as expected, see Figure 5.5). The figures in the table show that the direct estimates of the 1983 TFHS for the Central and North Regions were actually quite plausible, differing from the adjusted total fertility rates by only 0.0 and 0.2. The 1978 TFS, on the other hand, appears to have overestimated fertility in the North Region for the last period by 0.3 children.

If the differences in the table were expressed as percentages of the adjusted rates, it is observed that the underestimation of fertility in the 1978 TFS and the 1983 TFHS were quite serious in the East Region in both surveys (19 and 17 percent), and in the South Region in the 1978 TFS (27 percent). The extent of underestimation for the other regions are below 15 percent. It also appears from the table that the two surveys produce rather plausible estimates of fertility in the North Region.

It is worth noting at this point that the adjusted total fertility rates for the two periods in question are higher than the adjusted estimates that appeared in the 1988 TPHS report. The latter, as mentioned earlier, relied on a similar adjustment procedure but was carried out on the rates for the national total only (HIPS, 1989). In such a case, the altogether failure of a survey in estimating fertility accurately for a region is disguised in the rates for the national total, which are used for adjustment. Also, at the time of that analysis, the last survey available was the 1988 TPHS, which was actually producing low fertility rates, mainly due to underestimation of fertility in the North and East Regions for all periods. With the more detailed analysis of regional estimates, and the addition of the results from the 1993 TDHS, somewhat higher fertility estimates are recovered for the 1973-78 and 1978-83 periods in this study (respectively 5.3 and 4.7, as opposed to 4.9 and 4.2 in the 1988 TPHS report). However, analysis of cohort-period fertility rates do not provide sound bases for estimating levels of fertility for periods later than 1978-83; therefore, it is necessary to undertake other types of analysis.

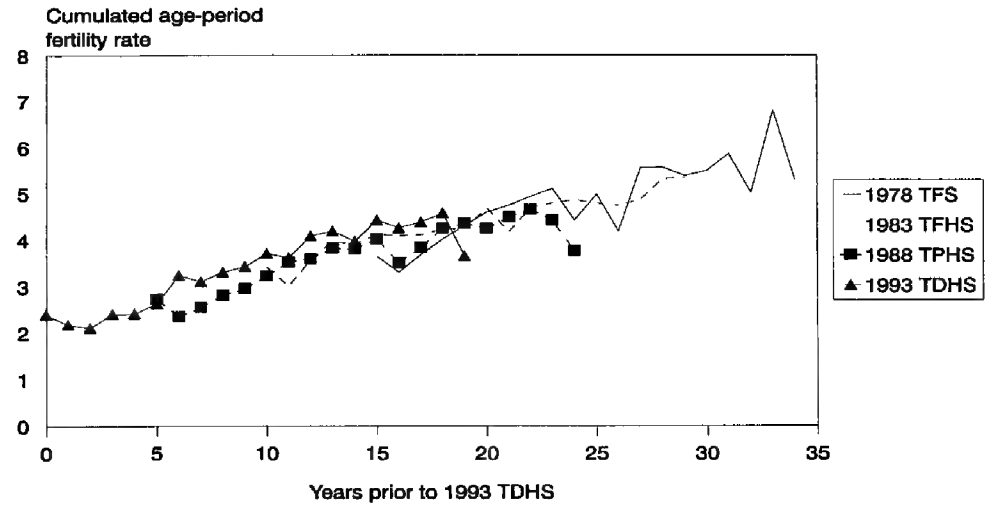
5.2 Age-period Fertility Rates

Although cohort-period fertility rates are convenient tools for the analysis of fertility trends, they may disguise certain details of data on fertility; this is especially so in Turkey. As shown earlier, the "recovery" of the numbers of births in the year immediately preceding each survey implies that if births in the most recent five-year period are being underestimated, it is most likely that the degree of underestimation is at a minimum for the one-year period immediately preceding the surveys.

In an attempt to examine fertility trends in more detail, conventional age-period fertility rates for single-year periods preceding the surveys have been calculated. Admittedly, such rates are subject to significant sampling errors and chance fluctuations; however, they may be revealing of reporting patterns and may provide clues to real fertility trends.

Figure 5.9 shows age-period fertility rates cumulated to age 35 from the four surveys, indexed by number of years preceding the 1993 TDHS. The curves for the four surveys all share a common pattern, in that the rates for the single years immediately preceding the surveys indicate an increase in fertility from two years preceding them. As discussed earlier, this is attributable to the recovery in the number of births in the year immediately preceding the surveys; it is interesting that the same pattern exists in all four surveys. This is most likely due to the reporting of children age 1 (and perhaps 2) as being 0, and/or the relatively better estimation of the number of births in the year immediately preceding the surveys compared to those born in the previous years.

Figure 5.9 Cumulated Age-period Fertility Rates to Age 35, 1978-1993



A second similarity between the curves from the four surveys is the rapid increase in the fertility rates as one goes farther back in time from year 1 or 2 to year 6. This pattern is possibly due to the out-transference of 3- and 4-year-old children from the 0-4 age group to the 5-9 age group.

As with the cohort-period fertility rates, age-period fertility rates also reveal data problems when tabulated by regions. Figures 5.10 to 5.14 present cumulated age-period fertility rates to age 35 for the five major regions as estimated from the four surveys, for 20 single-year periods preceding each survey. Again, the X-axis is indexed by years preceding the 1993 TDHS. Although the large numbers of data points and the existence of chance fluctuations due to the small numbers of exposure in each figure is confusing, it is possible to detect certain patterns which are shared by the estimates for all regions, as well as those which are unique to particular regions and surveys. In almost all cases, the last-year rates are higher than the rates for 2-4 years, sometimes as much as 5 years immediately preceding them. The heaping on the sixth and seventh years preceding the surveys is evident; the failure of the 1988 PHS to estimate fertility accurately in the East Region and the failure of the 1978 TFS to do so in the South Region is easily observed. Otherwise, lines fluctuate heavily, crossing each other at numerous points. It also appears from the figures that if the closest rates were averaged to obtain an underlying trend, fertility rates obtained for periods 1 to 5 years preceding the surveys would remain below the trend line, while rates for the single years preceding the surveys would be quite close to the trend line.

It would be inappropriate to ignore the detail that age-period rates provide regarding fertility levels and trends, although, as mentioned earlier, the single-year rates under consideration are heavily influenced by sampling errors. Nevertheless, given the failure of the analysis of cohort-period fertility rates in providing a basis for the modification of fertility rates for recent periods, adjustment of single-year age-period rates appears to be a plausible alternative. For this purpose, a relatively more subjective adjustment procedure was used to modify single-year rates for the five major regions and provide estimates of fertility for periods referring to single years before each survey. Adjustment of the single-year rates was carried out by tabulating single-year rates from each survey for 12-month periods for which age-specific rates were not truncated; as with the adjustment of cohort-period fertility rates, rates which were closest to each other were averaged. In doing so, due attention was given to the fact that the 1978 and 1988 surveys had failed in recovering sound estimates of fertility for some regions. The resulting averages were then smoothed to remove the effects of chance fluctuations by using five-term moving averages. Estimates for the national total were obtained by weighting the regional fertility rates by the women-years of exposure in each region in each survey corresponding to the year of estimation. The final estimates are shown in Table 5.4. The table also includes directly calculated single-year total fertility estimates of the four surveys, as well as the difference between the adjusted estimates and directly calculated rates.

Before the results of the adjustment are discussed, it is worthwhile to look at total fertility rates directly estimated from each survey.[9] It is important to note that these figures have formed the basis for policy strategies and development plans of the country; interpretations of future prospects of the Turkish population have been based on these directly calculated single-year rates.

Taken at face value, the trends implied by unadjusted fertility rates are clearly suspect, especially those for the five major regions of the country (Figure 5.15). Considering the rates for the national total, the total fertility rate in 1978 is estimated as 4.3; this rate declines to 4.0 in 1983 and to 3.1 in 1988; finally, it declines to 2.7 in 1993. The implication is a rapid decline in fertility, especially from 1983 to 1988, during

[9] The fertility rates in Table 5.4 are slightly different from those published in the survey reports. The reasons for this discrepancy range from differences in calculation procedures to differences in the procedures used for the imputation of ages and dates from raw data. However, the differences are negligible and do not cause any changes in the interpretations.

Figure 5.10 Cumulated Age-period Fertility Rates to Age 35, West Region, 1978-1993

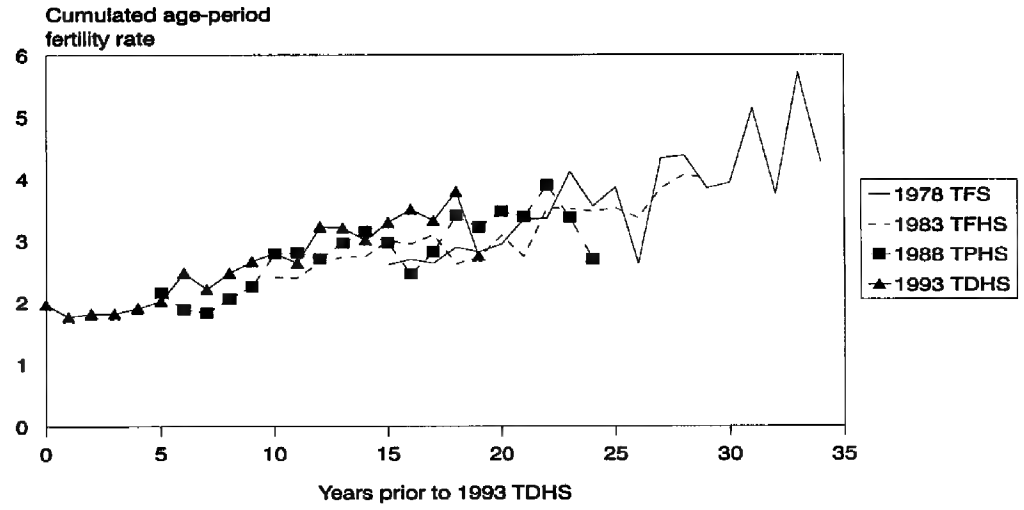


Figure 5.11 Cumulated Age-period Fertility Rates to Age 35, South Region, 1978-1993

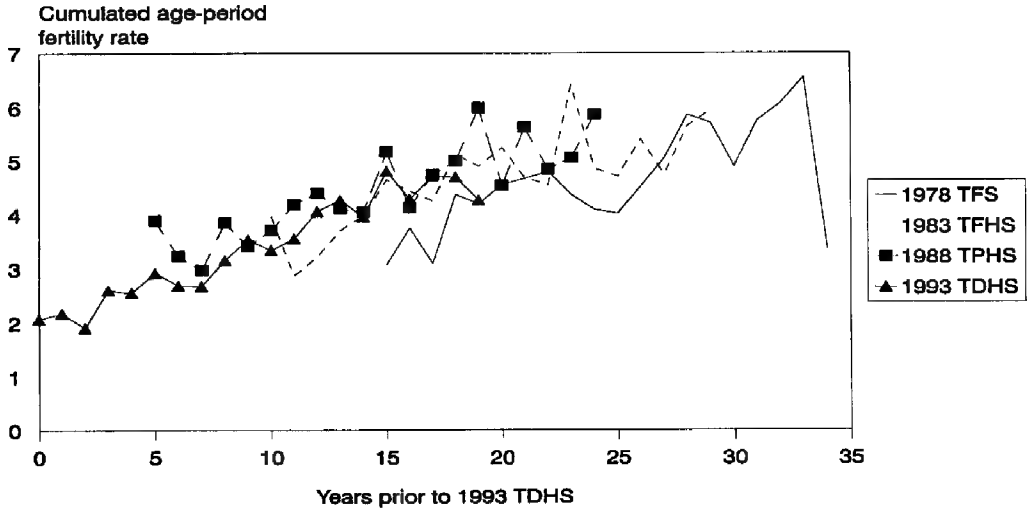


Figure 5.12 Cumulated Age-period Fertility Rates to Age 35, Central Region, 1978-1993

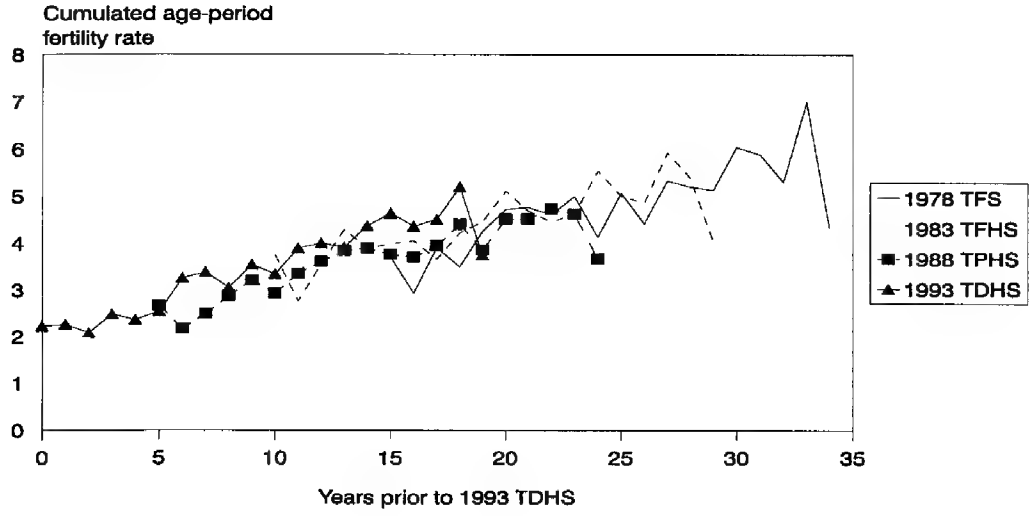


Figure 5.13 Cumulated Age-period Fertility Rates to Age 35, North Region, 1978-1993

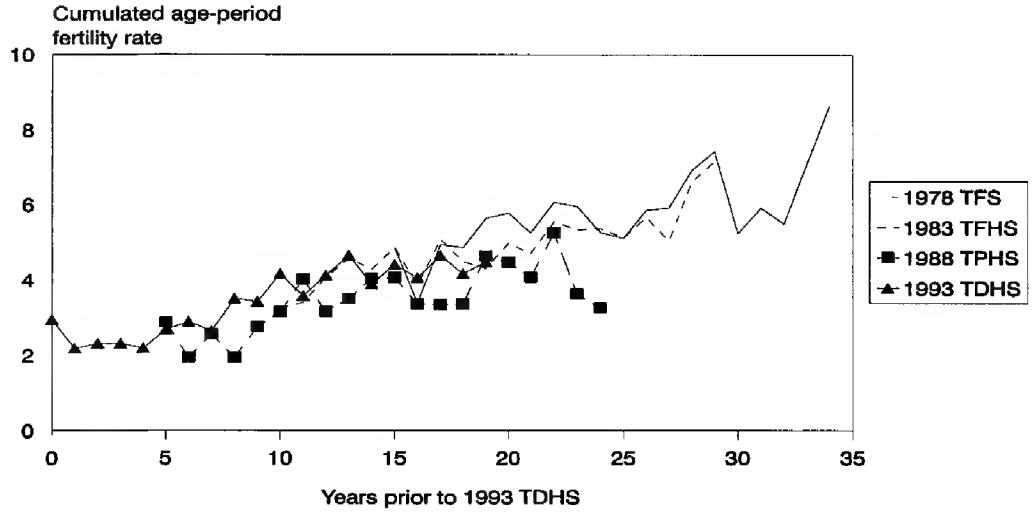


Figure 5.14 Cumulated Age-period Fertility Rates to Age 35, East Region, 1978-1993

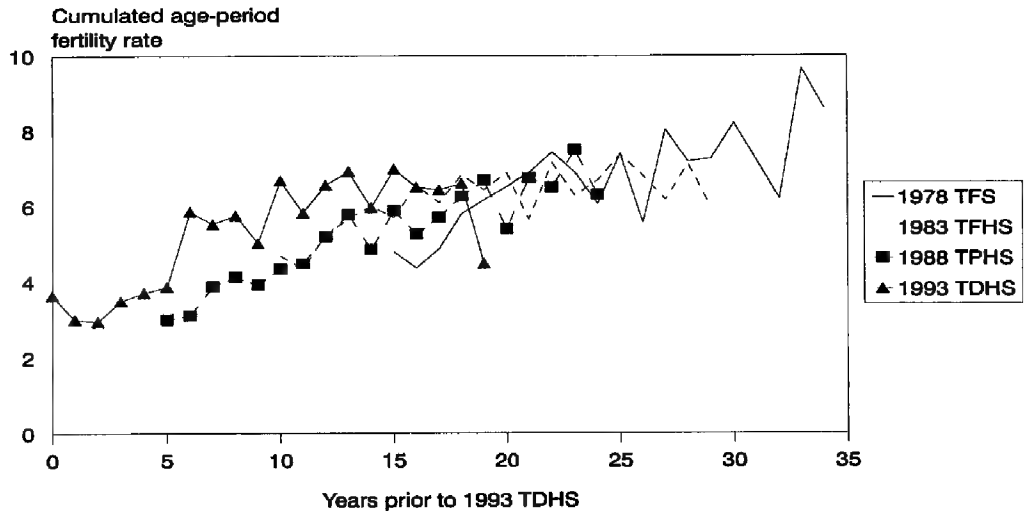
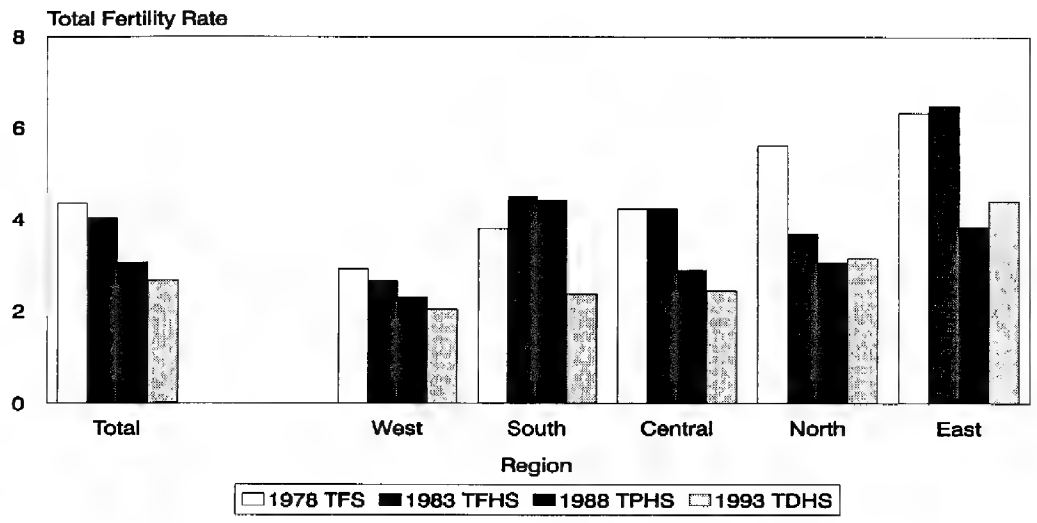


Table 5.4 Adjusted estimates of total fertility rates according to region, for single-year periods preceding the 1978 TFS, the 1983 TFHS, and the 1988 TPHS

		Region					
Survey	Fertility variable	West	South	Central	North	East	Total
1978 TFS	Adjusted TFR[1]	3.4	5.5	4.8	5.4	7.8	5.1
	TFR[2]	2.9	3.8	4.2	5.6	6.3	4.3
	Difference[3]	0.5	1.7	0.6	-0.2	1.5	0.8
1983 TFHS	Adjusted TFR[1]	3.0	4.8	4.1	4.1	7.0	4.3
	TFR[2]	2.6	4.5	4.2	3.7	6.5	4.0
	Difference[3]	0.4	0.3	-0.1	0.4	0.5	0.3
1988 TPHS	Adjusted TFR[1]	2.3	3.3	3.1	3.0	5.6	3.2
	TFR[2]	2.3	4.4	2.9	3.1	3.8	3.1
	Difference[3]	-0.0	-1.1	0.2	-0.1	1.8	0.1
1993 TDHS	TFR[2]	2.0	2.4	2.4	3.2	4.4	2.7

[1]Adjusted Total Fertility Rate
[2] TFR directly calculated from the survey
[3]Difference = (Adjusted TFR-(TFR)

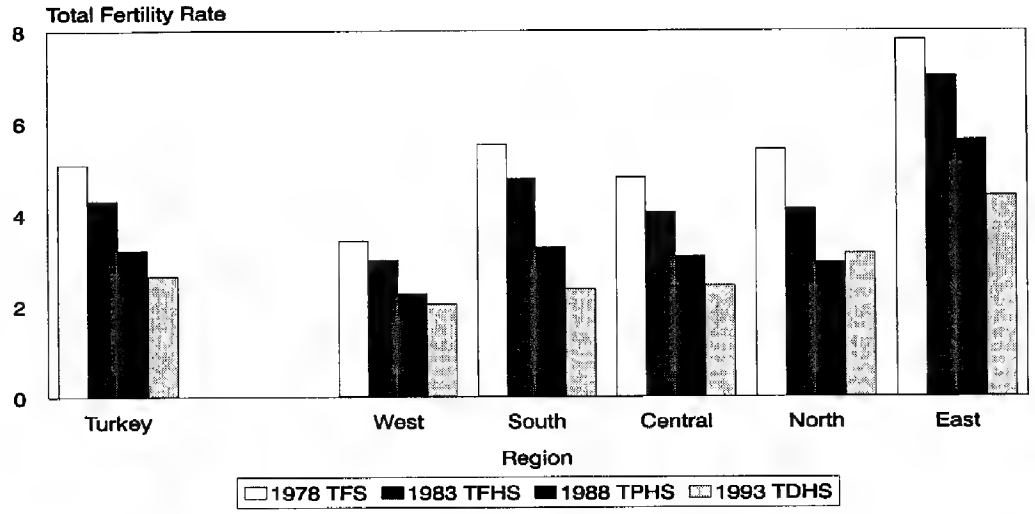
Figure 5.15 Survey Estimates of Single-year Total Fertility Rates, 1978-1993



the data suggest that the total fertility rate declined by almost one child. When regional estimates are taken into account, the implied trends are quite implausible. For instance, the survey estimates imply that in the South Region, total fertility rates had first increased from 3.8 in 1978 to 4.5 in 1983, remained almost unchanged from 1983 to 1988, but almost halved from 1988 to 1993. In the Central Region, the implication is that from 1978 to 1983, fertility rates were almost stable; from 1983 to 1988, declined from 4.2 to 2.9, and from then, declined from 2.9 to 2.4. In the North Region, the figures imply that fertility rates declined from 5.6 in 1978 to 3.7 in 1983, and from 1988 to 1993, remained unchanged. In the East Region, little had changed from 1978 to 1983, but from 1983 to 1988, fertility rates declined from 6.5 to 3.8, and then, rather surprisingly, increased to 4.4 in 1993. Only for the West Region do the rates imply a regular and plausible declining trend in fertility. Accordingly, the directly estimated fertility rates appear to imply that regional differentials have been changing in an unexpected fashion. Although the highest rates are obtained from the East Region and the lowest rates are obtained for the West Region in all four surveys, the ranking of the other three regions keeps changing. The second highest fertility rates are in the South Region in 1983 and 1988, while the rate for this region is the second lowest in the 1978 TFS; the North Region provides the second lowest fertility rate in 1983, while it provides a rate which is quite close to the rate for the East Region in 1978. Clearly, regional differentials suggested by the surveys appear to be quite implausible.

Adjusted rates, on the other hand, provide a more plausible picture of regional fertility trends (Figure 5.16). For the national total, the total fertility rate declines by 15 percent from 1978 to 1983, by 25 percent from 1983 to 1988, and by 17 percent from 1988 to 1993. With the notable exception of the North Region (discussed later), fertility rates decline in all regions from one survey to the next during the period from 1978 to 1993; in all surveys, the East Region has the highest fertility rate, while the West Region has the lowest. The South Region ranks second in 1978, 1983 and 1988; the rate of fertility decline is highest in this region, which ends up having the second lowest fertility rate in 1993. The Central Region has the second lowest fertility rate in 1978 and 1983, and the third lowest fertility rate in 1988 and 1993.

Figure 5.16 Adjusted Estimates of Single-year Total Fertility Rates, 1978-1993



The reversal in the fertility rates of the North Region is an interesting feature of the adjusted rates. Examining Figure 5.13 shows that the last year age-specific rates for the North Region were relatively higher than not only the preceding two years, but higher than the rates for all five preceding years. This may imply that the displacement of children's birth dates (particularly stating birth dates as being closer to the survey date than they actually were) in this region was much stronger than other regions.

5.3 Fertility Levels Implied by Bongaarts' Proximate Determinants Model

As discussed later, the estimates of fertility for the late-1970s recovered by adjusting cohort-period fertility rates are quite close to those obtained from the adjustment of age-period rates, which put some confidence in the two somewhat different procedures used to adjust the rates. However, rates for the latest periods, particularly for 1993, remain unadjusted. For this purpose, the proximate determinants approach is used here to assess the reliability of survey estimates, and if possible, to adjust them.

A useful tool that can be employed to assess the internal consistency of estimated levels of fertility and information on proximate determinants of fertility, namely contraceptive use, marriage, postpartum amenorrhea and abortions, is Bongaarts' proximate determinants model. The model can also be used to assess the plausibility of implied trends in fertility, by projecting total fertility rates using information on the changes in these proximate determinants.

Following the work of Davis and Blake (1956) some forty years ago, Bongaarts developed a model for quantifying the contribution of various proximate determinants to the control of fertility (Bongaarts, 1978, 1982; Bongaarts and Potter, 1983). The rationale of the model is that the level of fertility in a population falls below its potential level through the direct operation of various factors which limit exposure to intercourse and exposure to conception, and through factors which affect pregnancy outcomes and the length of the postpartum insusceptible period. It is only through one or more of these proximate

determinants that indirect factors such as cultural and socioeconomic characteristics can influence fertility. The vital difference between the proximate and indirect determinants of fertility is that changes in the former group of factors necessarily lead to changes in the level of fertility, while changes in the latter may not bring about changes in fertility. Therefore, if the potential level of fertility and the "level" of each of the proximate determinants were known, it would be possible to quantitatively demonstrate the relative contribution of each of the proximate determinants to the difference between the observed and potential fertility.

Bongaarts' model is not the only analytical model that can be used for the analysis of the effects of proximate determinants on fertility (see, for instance, Hobcraft and Little, 1984; Mosley et al., 1982). Also, the validity of the model has recently come under criticism (Reinis, 1992). However, it is the most widely used model and a vast amount of literature exists on it, including applications to data from numerous populations.[10] In the model's application in this study, the fertility reducing impacts of four proximate determinants—marriage, contraception, postpartum infecundability, and abortion—are considered.

Bongaarts' model is a multiplicative model and expresses the actual level of fertility, measured with the total fertility rate, as the outcome of the fertility inhibiting effects of four proximate determinants on the total fecundity rate. Each of the proximate determinants is expressed as an index, which can theoretically range from 0 to 1. A value of 0 for an index indicates the total suppression of fertility by the proximate determinant that the index is based upon, whereas a value of 1 indicates no inhibiting effect of a proximate determinant on fertility. The model is expressed as:

$$TFR = TF \times Cm \times Cc \times Ca \times Ci$$

TFR is the actual total fertility rate, computed in this study as the synthetic rate pertaining to the single year preceding a survey. The age patterns of single-year total fertility rates are adjusted by using the age patterns of three-year total fertility rates estimated from each survey.

*TF*is the total fecundity rate, indicating the hypothetical maximum (potential) level of fertility. *TF* is assumed to range between 13 and 17 for most populations. In model analyses, a *TF* of 15.3 is used.

Cm is the index of marriage. The index would have the value of 1 if all women in the reproductive age groups were married (or cohabiting), and would have no effect on fertility; in other words, non-marriage would have no inhibiting effect on fertility. In the other extreme case, a value of 0 for *Cm* would indicate that no women in the reproductive age groups would be exposed to intercourse, which would totally inhibit fertility. The index is calculated as follows:

$$Cm = TFR / TMFR = \Sigma f_a / (\Sigma f_a / m_a)$$

where *TMFR* is the total marital fertility rate, f_a is the age specific fertility rate for age group a. In this study, the *TMFR* was indirectly estimated by using proportions married in each age group of women (m_a). Following Bongaarts (1978), the marital fertility rate for the age group 15-19 was taken as 75 percent of the rate for the 20-24 age group.

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[10] Only a handful of published applications of the Bongaarts model to Turkish data exist. To the author' knowledge, the only application of the model which was subsequently published in some detail was that carried out by Özbay (1978), who used data from the 1973 and 1978 surveys. Unfortunately, the analyses in the study mentioned appear to have suffered from a number of drawbacks, including missing information on proximate determinants and the incorrect calculation of the abortion index (Ca). A United Nations publication appears to have applied the Bongaarts model to the 1978 TFS data, but the full results of the application are not shown in the publication mentioned (United Nations, 1987). Another application of the Bongaarts model appears in HIPS (1989), where the model was used primarily to project the level of total fertility from 1983 to 1988. No analysis was undertaken to assess the internal consistency of the two surveys in regard to observed fertility and proximate determinants.

Cc is the index of contraception. *Cc* is calculated by using the following formula:

$$Cc = 1 - (1.08 \times u \times e)$$

where u is the proportion among married women using a contraceptive method, and e is the average effectiveness of methods used by married women, weighted by the proportion of users of each method. Following Bongaarts (1978), married women breastfeeding a child age 6 months or less at the time of survey are considered to be nonusers to correct for the overlap between contraception and postpartum infecundability. e_m, the effectiveness of method m, is calculated by using method-specific failure rates and the following formula:

$$e_m = 1 - [\,(1 - \sqrt[12]{(1 - {}^mF_{12})}\,)\,/f\,]$$

where ${}^mF_{12}$ is the first year failure rate of method m, and f is fecundability (the monthly probability of becoming pregnant), taken as 0.17 (Hammerslough, 1993).

Ca is the index of abortion. The index is calculated as follows:

$$Ca = TFR / (TFR + (0.4 \times (1 + u) \times TA))$$

where u is the proportion of currently married women using any method of contraception and *TA* is the total period induced abortion rate (sum of age-specific induced abortion rates), calculated for single years preceding the surveys.

Ci is the index of postpartum insusceptibility. Reflecting the loss of potential fertility due to the extension of the postpartum nonsusceptible period due to amenorrhea and abstinence, the index is calculated as follows:

$$Ci = 20 / (18.5 + i)$$

where i stands for the mean (or median) duration of postpartum insusceptibility. Median durations have been used in this study.

Table 5.5 shows the results of the application of the Bongaarts model to regional data from the four surveys. In this application, survey data were taken at face value, with the exception of interpolations which were needed to produce estimates for certain variables for which data were not available in the 1978, 1983 and 1988 surveys. The footnote of the table includes information on how data on fertility and proximate determinants were incorporated into the application. Included in the table are estimates of the four indexes, unadjusted fertility rates from the surveys, implied total fertility by the model (based on the proximate determinants and a total fecundity of 15.3), and the ratio of the observed total fertility rate to that implied by the model. Also shown are implied total fecundity rates for each survey and region on the basis of the observed fertility rate and the four indexes (obtained by rearranging the first formula in this section).

Some interesting observations are made from the data in the table. The findings indicate that the 1978 TFS data underestimate total fecundity, while those of the 1988 PHS overestimate total fecundity (with the exception of the East Region). An underestimation of total fecundity is indicative of underestimation of fertility, and/or incorrect information on proximate determinants. If a threshold of 10 percent is taken, the implied total fertility rates deviate strongly from the observed rates in 13 instances out of 20. In the 1978 TFS, all regional estimates of total fertility are more than 10 percent below the implied fertility levels, while in the 1988 PHS, four of the five regional estimates of total fertility are more than 10 percent above the implied fertility rates. In the 1983 TFHS, the observed fertility rate for the Central Region is significantly

Table 5.5 Application of the Bongaarts model: Unadjusted data by region from the 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Survey	Variable	Region				
		West	South	Central	North	East
1978 TFS	*Cm*	.6928	.6767	.7518	.7591	.8109
	Cc	.5272	.6674	.6687	.6755	.8322
	Ca	.8610	.9491	.8835	.9383	.9720
	Ci	.8772	.8621	.8197	.8811	.8197
	Observed *TFR* (1)	2.8	3.8	4.2	5.6	6.3
	Implied *TFR* (2)	4.2	5.7	5.6	6.5	8.2
	Ratio (½)	0.66	0.67	0.76	0.87	0.76
	Implied *TF*	10.1	10.3	11.6	13.3	11.8
1983 TFHS	*Cm*	.6491	.6432	.6718	.6700	.7777
	Cc	.3875	.5396	.5139	.4991	.7737
	Ca	.8398	.9416	.8793	.8949	.9672
	Ci	.8901	.8745	.8309	.8945	.8309
	Observed *TFR* (1)	2.6	4.5	4.2	3.7	6.5
	Implied *TFR* (2)	2.9	4.4	3.9	4.1	7.4
	Ratio (½)	0.92	1.03	1.10	0.90	0.88
	Implied *TF*	14.0	15.8	16.8	13.7	13.4
1988 TPHS	*Cm*	.5557	.6288	.6729	.6160	.6739
	Cc	.3158	.4859	.3420	.3713	.5046
	Ca	.8080	.9279	.8261	.8605	.9254
	Ci	.9038	.8877	.8428	.9079	.8428
	Observed *TFR* (1)	2.3	4.4	2.9	3.1	3.8
	Implied *TFR* (2)	2.0	3.9	2.5	2.7	4.1
	Ratio (½)	1.17	1.15	1.18	1.12	0.95
	Implied *TF*	17.9	17.6	18.0	17.1	14.5
1993 TDHS	*Cm*	.5804	.5550	.5936	.6088	.6782
	Cc	.2919	.3761	.3801	.3708	.5767
	Ca	.7811	.8445	.8158	.8605	.9309
	Ci	.9174	.9009	.8547	.9217	.8547
	Observed *TFR* (1)	2.0	2.4	2.4	3.2	4.4
	Implied *TFR* (2)	1.9	2.4	2.4	2.7	4.8
	Ratio (½)	1.09	0.98	1.01	1.15	0.92
	Implied *TF*	16.7	14.9	15.5	17.6	14.1

Note: For total fertility rates, direct estimates of the surveys were used (provided in Table 5.4). To remove the effects of chance fluctuations, the age-pattern of fertility embodied in the three-year fertility rates from each survey and region were used to obtain age-specific fertility rates to represent the age pattern of the single-year total fertility rates.

Estimates of the proportions married in each survey and region were taken from Table 4.1.

Total abortion rates shown in Table 4.8 were used; rates pertaining to 1983 and 1988 were obtained by linear interpolation.

Method-specific proportions of contraceptors among married women were modified by designating women breastfeeding a child 6 months or younger as nonusers, to account for the overlap between contraception and postpartum insusceptibility.

Contraceptive effectiveness rates were adopted from Dervişoğlu and Ergör (1994); for those methods for which estimates in the mentioned publication were not available, rates were assumed on the basis of the literature (failure rates of 0 were assumed for injectables and female and male sterilization; use of douche and other folk methods were assumed to be associated with 50 percent failure rates).

Durations of postpartum insusceptibility in each region were assumed to have declined by one month from 1978 to 1993; using estimates of median durations of postpartum insusceptibility from the 1993 TDHS, durations were estimated for the three previous surveys separately for each of the regions.

higher than the implied rate, while the opposite is true for the North and East Regions. Also noteworthy is the generally good agreement between the implied and observed fertility rates in the 1993 TDHS, with the possible exception of the North Region. In conclusion, assuming that the Bongaarts model provides a good basis for the analysis of proximate determinants of fertility, Turkish data taken at face value do not permit the evaluation of proximate determinants of fertility.

Analysis of the quality of data from the four surveys and the adjustment of fertility rates carried out earlier in this section reveal that certain modifications have to be introduced if meaningful analysis of survey data is to be performed. For this purpose, the input data used for the application of the Bongaarts model were modified from a number of respects and the application was carried out. More specifically, the following modifications were introduced: for the observed fertility, adjusted total fertility rates were used, based on the adjustment carried out on single-year rates (which appear in Table 5.4), and proportions of contraceptive users in 1988 were interpolated by using the proportions in 1983 and 1993. The results are shown in Table 5.6.

Table 5.6 Application of the Bongaarts model: Adjusted data by region from the 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

		Region				
Survey	Variable	West	South	Central	North	East
1978 TFS	*Cm*	.6679	.6767	.7518	.7591	.8110
	Cc	.5272	.6674	.6687	.6755	.8322
	Ca	.8840	.9644	.8961	.9362	.9771
	Ci	.8772	.8621	.8197	.8811	.8197
	Adjusted TFR (1)	3.4	5.5	4.8	5.4	7.8
	Implied *TFR* (2)	4.2	5.7	5.7	6.5	8.3
	Ratio (½)	0.82	0.96	0.85	0.84	0.94
	Implied *TF*	12.5	14.7	13.0	12.8	14.4
1983 TFHS	*Cm*	.6490	.6432	.6718	.6700	.7777
	Cc	.3875	.5396	.5139	.4991	.7737
	Ca	.8563	.9447	.8746	.9051	.9696
	Ci	.8901	.8745	.8309	.8945	.8309
	Adjusted *TFR* (1)	3.0	4.8	4.1	4.1	7.0
	Implied *TFR* (2)	2.9	4.4	3.8	4.1	7.4
	Ratio (½)	1.02	1.09	1.05	0.99	0.94
	Implied *TF*	15.7	16.7	16.1	15.2	14.5
1988 TPHS	*Cm*	.5557	.6288	.6729	.6159	.6738
	Cc	.3373	.4525	.4460	.4329	.6746
	Ca	.8088	.9034	.8443	.8616	.9535
	Ci	.9038	.8877	.8428	.9079	.8428
	Adjusted *TFR* (1)	2.3	3.3	3.1	3.0	5.6
	Implied *TFR* (2)	2.1	3.5	3.3	3.2	5.6
	Ratio (½)	1.08	0.94	0.94	0.92	1.00
	Implied *TF*	16.6	14.4	14.4	14.1	15.4
1993 TDHS	*Cm*	.5804	.5550	.5936	.6088	.6782
	Cc	.2919	.3761	.3801	.3708	.5767
	Ca	.7811	.8445	.8158	.8605	.9309
	Ci	.9174	.9009	.8547	.9217	.8547
	Adjusted *TFR* (1)	2.0	2.4	2.4	3.2	4.4
	Implied *TFR* (2)	1.9	2.4	2.4	2.7	4.8
	Ratio (½)	1.09	0.98	1.01	1.15	0.92
	Implied *TF*	16.7	14.9	15.5	17.6	14.1

Improvements in the agreement between survey estimates and model estimates are striking. In only four cases do the model estimates deviate strongly from the survey estimates of fertility (in the West, Central and North Regions in the 1978 TFS, and the North Region in the 1993 TDHS). The model and observed estimates are very similar for the 1983 TFHS and 1988 TPHS; it appears that regional data from these two surveys can be used with a fair degree of confidence to assess the relative importance of proximate determinants and to project levels of fertility into the future, including 1993.

Inconsistency between the model estimates and observed fertility in the 1978 TFS is noteworthy. The inconsistency is again in the same direction; adjusted fertility rates are lower than model estimates. This would happen if the adjusted fertility rates are still too low, and/or if the effect of one or more proximate determinants is underestimated. The latter appears to be a more plausible explanation, since total fecundity is significantly below 15.3 in all regions. There are a number of potential biases which could have resulted in these findings. If, for instance, the duration of postpartum insusceptibility were actually longer in 1978, the incidence of prolonged spousal separation were significant (which is, based on the intensity of international migration movements in the 1970s, quite possible), or if contraception or abortions were underestimated, the implied total fecundity would fall below 15.3 and the observed fertility would appear to be lower than the model estimates. Results of the application of the Bongaarts model are compared with other estimates in the next chapter.

6 FINAL ESTIMATES OF FERTILITY AND COMPONENTS OF FERTILITY CHANGE

6.1 Final Estimates of Fertility

In this section, results of the analyses carried out in the previous section are brought together to check the consistency of total fertility estimates obtained by using different procedures. Table 6.1 shows directly estimated single-year total fertility rates from each of the three surveys, total fertility rates for 1978 obtained by interpolating adjusted five-year rates pertaining to the 1973-78 and 1978-83 periods, and estimates of fertility obtained by the analysis of information on proximate determinants in the three surveys. The table also includes estimates of total fertility obtained by carrying out indirect techniques on census data, which refer to the years 1978, 1983 and 1988 (SIS, 1995). The estimates in the table (with the exception of direct estimates) were used to obtain final estimates of fertility for 1978, 1983, and 1988 shown in the last column of the table, by leaving out estimates which were inconsistent with the others (shown in brackets), and averaging the remaining estimates.

It is interesting to note at this point that the Bongaarts model application to 1978 TFS data produces implied total fertility rates which are far above those from other sources. On the other hand, the Bongaarts model estimates for 1983 and 1988 agree well with estimates obtained by using other procedures. It appears that projecting fertility to 1993 from 1983 or 1988 by using information on the changes in proximate determinants or to carry out analysis on the components of fertility decline from 1983 or 1988 to 1993 would produce acceptable results.

Table 6.1 Estimates of single-year total fertility according to region, 1978 TFS, 1983 TFHS, and 1988 TPHS

Region	Survey	Survey estimates	Adjusted estimates[1]	Adjusted estimates[2]	Bongaarts model estimates	Census estimates[3]	Final estimates
West	1978 TFS	2.9	3.4	3.4	(4.2)	3.5	3.4
	1983 TFHS	2.6	3.0	-	2.9	3.0	3.0
	1988 TPHS	2.3	2.3	-	2.1	2.3	2.3
South	1978 TFS	3.8	5.5	5.6	5.7	(4.8)	5.6
	1983 TFHS	4.5	(4.8)	-	4.4	4.3	4.4
	1988 TPHS	4.4	3.3	-	3.5	3.3	3.4
Central	1978 TFS	4.3	4.8	4.6	(5.7)	4.6	4.7
	1983 TFHS	4.3	4.1	-	3.8	4.0	3.9
	1988 TPHS	2.9	3.1	-	3.3	3.1	3.1
North	1978 TFS	5.6	5.4	5.0	(6.5)	5.0	5.1
	1983 TFHS	3.7	4.1	-	4.1	4.4	4.2
	1988 TPHS	3.1	3.0	-	3.2	3.4	3.2
East	1978 TFS	6.3	7.8	8.1	8.3	(6.9)	8.1
	1983 TFHS	6.5	7.0	-	7.4	(6.7)	7.2
	1988 TPHS	3.8	5.6	-	5.6	5.6	5.6

[1] Estimates of total fertility from Table 5.4.
[2] Calculated by interpolating estimates of total fertility in Table 5.3.
[3] State Institute of Statistics (1995).
Note: Figures in parentheses are inconsistent with the other figures for that region, and were left out of the calculation of an average estimate.

Following this point, final estimates for the year 1993 were obtained by comparing four sets of estimates: direct estimates obtained from the 1993 TDHS, estimates obtained by the application of the Bongaarts model using information on proximate determinants in the 1993 TDHS, and two estimates of fertility obtained by projecting levels of fertility from the 1983 TFHS and 1988 TPHS to the year 1993, using information on the changes in the proximate determinants. The latter was obtained by using the following formula:

$$TFR_t = (TFR_b \times Cc_t) / (k \times Cc_b)$$

where

$$k = (Cm_b \times Ci_b \times Ca_b) / (Cm_t \times Cit \times Ca_t),$$

subscript b stands for the base year and subscript t stands for the target year (Stover et al., 1991). Fertility estimates of the 1978 TFS were not used to project fertility to 1993 because, as observed in Table 6.1, the Bongaarts model estimates of fertility for 1978 were generally inconsistent with other estimates of fertility. The results are shown in Table 6.2.

Table 6.2 Estimates of single-year total fertility rates by region, 1993 TDHS

Region	Direct estimates	Fertility implied by proximate determinants	Projected fertility from 1983	Projected fertility from 1988	Final estimates
West	2.0	1.9	1.9	2.0	2.0
South	2.4	2.4	2.7	2.3	2.4
Central	2.4	2.4	2.5	2.3	2.4
North	3.2	2.7	2.7	2.5	2.7
East	4.4	4.8	4.5	4.8	4.6

For the West, South and Central Regions, the direct estimates of the 1993 TDHS were quite consistent with the results of the other three estimation procedures. For this reason, the direct estimates of the 1993 TDHS were not subjected to any adjustment procedure. For the North Region, the direct estimate of the 1993 TDHS was higher than all other estimates; for the East Region, the opposite was observed. As previously presented, Figures 3.6 and 5.13 show that the number of births in the year preceding the 1993 survey in the North Region is implausibly high, possibly due to understatement of the ages of children born. On the other hand, Figures 3.6 and 5.14 clearly show that children born in the recent years have been omitted in the East Region, indicating that the fertility rates obtained for this region will be improved if an upward adjustment of the rates is undertaken. In the absence of any other external information, and on the basis of the direction and magnitude of changes in the proximate determinants in these two regions (Table 5.6), the medians of the estimates in Table 6.2 were taken as final estimates of fertility in both cases. It is believed that these estimates are more accurate than the directly estimated rates. These final estimates are shown in the last column of the table.

As the next step, the final estimates of fertility for the five regions were used to obtain the final estimates for the national total by using woman-years of exposure in each survey in each region. The results are shown in Table 6.3.

Table 6.3 Final estimates of fertility, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

	Region					
Survey	West	South	Central	North	East	Total
1978 TFS	3.4	5.6	4.7	5.1	8.1	5.1
1983 TFHS	3.0	4.4	3.9	4.2	7.2	4.3
1988 TPHS	2.2	3.4	3.1	3.2	5.6	3.2
1993 TDHS	2.0	2.4	2.4	2.7	4.6	2.7

The final estimates show that fertility declined in Turkey by 48 percent during the period from 1978 to 1993, at a rate of approximately 4 percent per year. The level of fertility is estimated as 5.1 in 1978, as opposed to the directly estimated 4.3 from the 1978 TFS, indicating that the 1978 TFS underestimated last-year fertility by about 17 percent. The findings indicate that fertility declined to 4.3 in 1983, and to 3.2 in 1988; these estimates are marginally higher (about five percent in both cases) than the direct estimates of the 1983 TFHS and 1988 TPHS. Finally, the total fertility rate is estimated as 2.7 for 1993. It is noteworthy that the same fertility rate was calculated directly from the 1993 TDHS.

In regard to regional trends, the fastest decline in fertility appears to have taken place in the South Region from 1978 to 1993. In this region, fertility declined by 57 percent within a period of 15 years. In the West and East Regions, the two regions where fertility levels were respectively the lowest and the highest at the outset, slower paces of fertility decline are observed, slightly above 40 percent during the same period.

Finally, in this subsection, the results of the Bongaarts proximate determinants model application for the national total are presented, having estimated the total fertility rates from the four surveys by aggregating regional estimates. Table 6.4 shows the results of this application. For the 1983, 1988 and 1993 surveys, the Bongaarts model estimates of fertility are within 0.1 of the adjusted estimates, which is an indication of the internal consistency of the data of these surveys (given the adjustments to contraceptive use in 1988). Consequently, the implied total fecundity rates from these surveys are very close to 15.3. As with regions, the 1978 TFS estimates are of lesser consistency; the Bongaarts model estimate of fertility (5.9) is quite higher than the adjusted estimate of fertility (5.1), and the total fecundity rate is quite low. This is possibly a result of inaccuracies in the proximate determinants used; if the Bongaarts model estimate of

fertility was correct, this would imply an underestimation of fertility by the 1978 TFS of 35 percent, which appears implausible. Also, the indirect fertility estimate of the State Institute of Statistics for the period 1975-80 (5.1), obtained by the application of indirect techniques on census data, is consistent with the adjusted estimate of fertility of 5.1 (SIS, 1995).

The figures in Table 6.4 show that contraception is the most significant fertility inhibiting variable in Turkey, followed by delay of marriage. The effect of both contraception and delay of marriage appear to have been increasing quite significantly. While the fertility inhibiting effect of postpartum infecundability was greater than that of induced abortions in 1978 and 1983, the effects of the two proximate determinants were very close in 1988; in 1993, induced abortion was a more effective fertility inhibiting variable than postpartum infecundability, due to the increasing ratio of abortions to fertility and to decreasing duration of postpartum insusceptible period.

Table 6.4 Application of the Bongaarts model: Adjusted data, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Variable	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS
Cm	.7403	.6877	.6261	.6025
Cc	.6577	.5174	.4469	.3807
Ca	.9317	.9102	.8746	.8457
Ci	.8511	.8633	.8759	.8889
Adjusted *TFR* (1)	5.1	4.3	3.2	2.7
Implied *TFR* (2)	5.9	4.3	3.3	2.6
Ratio (½)	0.86	1.01	0.98	1.03
Implied *TF*	13.2	15.4	14.9	15.7

6.2 Components of Fertility Change: 1983-1993

As an attempt to contribute to the understanding of various proximate determinants to the steady decline of fertility in Turkey, the Bongaarts model is used to decompose the trend in the total fertility rates. This has been carried out for the period from 1983 to 1993, due to the fact that the results of the Bongaarts proximate determinants model appeared to be less reliable for 1978 (see Table 5.6), and most proximate determinants data were actually obtained by interpolations for 1988. The year 1983 is significant in the sense that it marks the introduction of the revised antinatalist legislation in Turkey, allowing induced abortions and signifying the increased dedication of the Turkish government to the spread of family planning services and to the reduction of fertility.

In the application here, the findings in Table 5.6 have been revised by replacing the final estimates in Table 6.3. With this replacement, index values of the proximate determinants are not affected, with the exception of *Ca*, which depends on the level of the total abortion rate, as well as the total fertility rate (see the relevant formula in Section 5). The implied total fecundity rate is also affected due to the change in the *TFR*. The final estimates of the fertility inhibiting effects of proximate determinants for the years 1983 and 1993 are shown in Table 6.5 for the national total and for the five major regions. The table also includes the final estimates of *TFR*, the implied values of *TFR* if a *TF* of 15.3 is assumed, as well as the implied values of *TF* based on the final estimates of *TFR* and the values of the indexes.

Table 6.5 Final estimates of proximate determinants and fertility rates by region, 1983 TFHS and 1993 TDHS

Variables	Survey	Region					
		West	South	Central	North	East	Total
Proximate determinants							
Cm	1983 TFHS	.6490	.6432	.6718	.6700	.7777	.6877
	1993 TDHS	.5804	.5550	.5936	.6088	.6782	.6025
Cc	1983 TFHS	.3875	.5396	.5139	.4991	.7737	.5174
	1993 TDHS	.2919	.3761	.3801	.3708	.5767	.3807
Ca	1983 TFHS	.8563	.9403	.8704	.9069	.9704	.9102
	1993 TDHS	.7811	.8461	.8133	.8426	.9337	.8457
Ci	1983 TFHS	.8901	.8745	.8309	.8945	.8309	.8633
	1993 TDHS	.9174	.9009	.8547	.9217	.8547	.8889
Fertility rates							
Final estimate of *TFR*	1983 TFHS	3.0	4.4	3.9	4.2	7.2	4.3
	1993 TDHS	2.0	2.4	2.4	2.7	4.6	2.7
Implied *TFR*	1983 TFHS	2.9	4.4	3.8	4.2	7.4	4.3
	1993 TDHS	1.9	2.4	2.4	2.7	4.8	2.6
Implied *TF*	1983 TFHS	15.7	15.4	15.6	15.5	14.8	15.4
	1993 TDHS	16.7	15.1	15.3	15.4	14.7	15.7

The table shows that with the new estimates of *TFR*, a more consistent series of values are observed for proximate determinants and fertility. Compared to the results of the earlier application of the Bongaarts model, values of implied *TF* are closer to 15.3 (the usually assumed value of *TF*), and the implied values of *TFR* are closer to the final estimates of *TFR*. These results are not surprising since the final estimates of fertility were obtained by using the results of the analysis of proximate determinants in the first place. However, the figures provide a more consistent basis for discussing the components of fertility change in Turkey during the period 1983-1993.

A convenient procedure for evaluating the relative importance of each proximate determinant is to consider its percentage contribution to the difference between the total fertility rate and the implied total fecundity rate. The percentage contribution of each index can be calculated as follows:

$$100 \, (\log Cx \, / \, (\log Cm + \log Cc + \log Ca + \log Ci))$$

where, for *Cx*, values of *Cm, Cc, Ca* and *Ci* are successively employed (United Nations, 1987). Table 6.6 shows the results of this application.

For the national total and for all five regions, contraception appears to be the most important proximate determinant in reducing fertility below its potential level in both 1983 and 1993. In only the East Region in 1983 does another proximate determinant (in this case, marriage) have a comparable effect on fecundity to that of contraception. The relative effects of induced abortion and postpartum infecundability are significantly smaller than those of contraception and marriage. In general, the relative effect of marriage appears to have declined or remained intact during 1983-1993, while the effect of contraception has increased in all regions of the country, most significantly in the East Region, where contraceptive use was very low in 1983. Generally, induced abortion accounts for a greater percentage of fertility reduction in 1993, compared to 1983. For the national total, induced abortion accounted for 7 percent of fertility reduction in 1983, and this figure has increased to 10 percent in 1993. With the exception of the West Region (where contraception was widespread even in 1983), the relative effect of postpartum infecundability has decreased

from 1983 to 1993. The most significant reduction in the relative effect of postpartum infecundability is observed in the East Region, parallel to the radical increase in the relative effect of contraception in this region. The findings support the general hypothesis that the spread of contraceptive use and the consequent increase in the relative effect of contraception is usually accompanied by decreases in the relative effect of postpartum infecundability.

Table 6.6 Relative percentage contribution of each of the proximate determinants to the difference between the total fecundity rate and the total fertility rate by region, 1983 TFHS and 1993 TDHS

Region	Survey	Marriage	Contraception	Induced abortion	Postpartum infecundability	Total
West	1983 TFHS	26	57	9	7	100
	1993 TDHS	26	58	12	12	100
South	1983 TFHS	35	49	5	11	100
	1993 TDHS	32	53	9	6	100
Central	1983 TFHS	29	48	10	13	100
	1993 TDHS	28	52	11	8	100
North	1983 TFHS	31	53	7	9	100
	1993 TDHS	29	57	10	5	100
East	1983 TFHS	35	35	4	26	100
	1993 TDHS	33	47	6	13	100
Total	1983 TFHS	29	52	7	12	100
	1993 TDHS	29	55	10	7	100

Finally, the change in fertility from 1983 to 1993 is decomposed into its components. Since,

$$TFR_{93} / TFR_{83} = (Cm_{93} / Cm_{83}) \times (Cc_{93} / Cc_{83}) \times (Ca_{93} / Ca_{83}) \times (Ci_{93} / Ci_{83}) \times (TF_{93} / TF_{83})$$

the equation can be rearranged as:

$$Pf = Pm + Pc + Pa + Pi + Pr + I$$

where, Pf is the percentage change in TFR between 1983 and 1993, which is calculated as:

$$Pf = ((TFR_{93} / TFR_{83}) - 1) * 100$$

Pm, Pc, Pa, and Pi are percentage changes in TFR due to changes in each of the four proximate determinants, calculated as:

$$Pm = ((Cm_{93} / Cm_{83}) - 1) \times 100$$

$$Pc = ((Cc_{93} / Cc_{83}) - 1) \times 100$$

$$Pa = ((Ca_{93} / Ca_{83}) - 1) \times 100$$

and

$$Pi = ((Ci_{93} / Ci_{83}) - 1) \times 100$$

Pr represents the percentage change in TFR due to changes in the remaining proximate variables (natural fecundability, spontaneous intrauterine mortality and permanent sterility), and/or differences in implied total fecundity due to inaccurate fit of the model, and calculated as:

$$Pr = ((TF_{93} / TF_{83}) - 1) \times 100$$

and finally, I is an interaction factor. Thus, the percentage changes in TFR between 1983 and 1993 are equal to the sum of percentage fertility changes due to different proximate determinants plus an interaction term.

The first column of Table 6.7 shows the decomposition of fertility change into its components due to each of the determinants. The second column includes the decomposition results, standardized to add to 100 percent, and in the final column, the absolute change in *TFR* from 1983 to 1993 is decomposed into the contributions made by the proximate determinants. The values in the last column provides estimates of the extent to which *TFR* would have declined (or increased) if the relevant proximate determinant had changed but all other determinants had remained unchanged.

The results show that increases in contraceptive use (and shifts toward more effective methods) were the principal factor in the decline of fertility from 1983 to 1993. A reduction of 1.1 live births would have resulted due to more effective use of contraception in Turkey, if the levels of all other proximate determinants had remained constant. The table also points out the fact that delay in marriage was also a major factor in inhibiting fertility, albeit to a lesser extent. Changes in the duration of postpartum insusceptibility appear to have had a slightly promoting effect on fertility, possibly offsetting the fertility inhibiting effect of contraception. An interesting observation from the table is the appreciable effect of induced abortions in further inhibiting fertility in Turkey. If all other proximate determinants had remained constant, the increasing ratio of induced abortions to total fertility would have resulted in a decline in fertility of about 0.3 live births. From a policy perspective, this finding is significant. Induced abortions were made legal in 1983 for primarily improving reproductive health; it was also expected that with the spread of family planning services, the level of induced abortions would fall, and consequently, Turkish couples would rely less on aborting pregnancies to limit their family sizes. However, the table clearly provides evidence to the contrary, even indicating that the fertility inhibiting effect of induced abortion practices is strongest in regions where contraceptive use is high.

Low figures obtained for the "other" determinants are reassuring of the satisfactory fit of the Bongaarts model to Turkish data. However, especially in the West Region, the relatively high figures for these determinants indicate that there is still scope for improving the estimates of the levels of the proximate determinants or the fertility estimates.

Table 6.7 Decomposition of the change in total fertility and factors responsible for fertility change by region, 1983-1993

Region	Factor responsible for fertility change	Percentage change in TFR	Distribution of percentage change	Absolute change in TFR
West	Proportion married	-10.6	-32.7	-0.32
	Contraceptive use	-24.7	-76.3	-0.74
	Induced abortion	-8.8	-27.2	-0.26
	Postpartum infecundability	3.1	9.5	0.09
	Other determinants	6.8	21.1	0.21
	Interaction	1.8	5.5	0.05
	Total	-32.3	100.0	-0.97
South	Proportion married	-13.7	-30.2	-0.60
	Contraceptive use	-30.3	-66.7	-1.33
	Induced abortion	-10.0	-22.0	-0.44
	Postpartum infecundability	3.0	6.6	0.13
	Other determinants	-2.1	-4.7	-0.09
	Interaction	7.7	16.9	0.34
	Total	-45.5	100.0	-2.00
Central	Proportion married	-11.6	-30.3	-0.45
	Contraceptive use	-26.0	-67.7	-1.02
	Induced abortion	-6.6	-17.1	-0.26
	Postpartum infecundability	2.9	7.4	0.11
	Other determinants	-2.0	-5.2	-0.08
	Interaction	4.9	12.7	0.19
	Total	-38.5	100.0	-1.50
North	Proportion married	-9.1	-25.6	-0.38
	Contraceptive use	-25.7	-72.0	-1.08
	Induced abortion	-7.1	-19.9	-0.30
	Postpartum infecundability	3.0	8.5	0.13
	Other determinants	-0.9	-2.5	-0.04
	Interaction	4.1	11.4	0.17
	Total	-35.7	100.0	-1.50
East	Proportion married	-12.8	-35.4	-0.92
	Contraceptive use	-25.5	-70.5	-1.83
	Induced abortion	-3.7	-10.3	-0.27
	Postpartum infecundability	2.9	7.9	0.21
	Other determinants	-0.7	-1.9	-0.05
	Interaction	3.7	10.1	0.26
	Total	-36.1	100.0	-2.60
Total	Proportion married	-12.4	-33.3	-0.53
	Contraceptive use	-26.4	-71.0	-1.14
	Induced abortion	-7.1	-19.0	-0.30
	Postpartum infecundability	3.0	8.0	0.13
	Other determinants	1.9	5.2	0.08
	Interaction	3.8	10.1	0.16
	Total	-37.2	100.0	-1.60

7 CONCLUSIONS

Fertility has declined significantly in Turkey since the late 1970s. Specifically, the total period fertility rate declined from 5.1 live births per woman in 1978 to 2.7 in 1993, indicating a rapid change in the fertility behavior of the Turkish population. An important aspect of this decline has been the participation of all regions of the country in the process, albeit with relatively minor differences. A faster decline in fertility in the South Region, of approximately 57 percent, from 5.6 in 1978 to 2.4 in 1993, was simultaneous with slower declines in the West and East Regions (approximately 40 percent).

The study has shown that rapid increases in contraceptive use and improvements in contraceptive mix have been the main factors behind the rapid decline of fertility in Turkey. The findings have indicated that the fertility inhibiting effect of delays in marriage have also contributed significantly to fertility decline, while the increasing ratio of induced abortions to achieved fertility has meant that there is still scope for promoting family planning services not only for limiting fertility but also for limiting the utilization of abortions to limit family sizes.

It has become clear that accepting the results of Turkish demographic surveys at face value would generally lead to misleading interpretations of fertility levels and trends. As a result of the adjustments to the directly calculated fertility rates from four demographic surveys, the single-year total fertility rates were adjusted upward by 18 percent for the 1978 TFS, by 7 percent for the 1983 TFHS, and by 5 percent for the 1988 TPHS. The adjustment of the regional estimates of the 1993 TDHS resulted in an aggregate total fertility rate for the national total of 2.7, which is similar to the directly calculated rate from the mentioned survey. Although these figures hint at improving quality of the surveys, it must be acknowledged that they may partly be artifacts of the adjustment procedures used. Nevertheless, the final estimates are almost certainly better representations of the real levels of fertility during the period from the late 1970s to the early 1990s.

In addition to providing new estimates of fertility levels and trends in Turkey, and attempting to explain the contribution of various proximate determinants to fertility decline, this study has also brought together for the first time, in comparable form, results from major demographic surveys since the late 1970s, ranging from contraceptive use to cohort-period fertility rates. Also carried out in this study were comparable analyses of data quality from the mentioned surveys, which have hopefully provided useful information on the quality problems of the existing survey data that can be used to develop new strategies for conducting demographic surveys in the future.

Demographic surveys are almost never free from errors, but the extent and nature of these errors vary considerably. One of the most intriguing aspects of Turkish demographic data is the reporting patterns of the birth dates/ages of children born, which is probably unique to Turkish respondents. The reason why U-shaped distributions of the numbers of children born within the most recent five years preceding the surveys and censuses are obtained needs to be further researched, since this reporting pattern appears to cause most of the problems in fertility data and in indicators derived from them.

The Turkish population is not one of those populations where accurate knowledge of birth date and age is a cultural attribute. Quite the contrary, age and birth date reporting is relatively poor in Turkey, which can cause problems not only in fertility analyses but in almost all demographic analyses. Poor quality age data can be avoided to a certain extent by better interviewers and improved question modules. There are, however, other data quality problems which can be largely avoided by better field supervision and by introducing relevant modifications to the organization of fieldwork. Such data problems include false designation of eligible women as being ineligible and heaping of ages and birth dates. Also important from a data quality standpoint is the sampling procedures used to select survey samples, since the findings in this

study have indicated that surveys have, at times, completely failed to represent the survey universe adequately in some regions.

There are two important shortcomings of this study. The first is the absence of analyses incorporating migration processes into fertility analyses. Retrospective analyses of fertility may be influenced by migration of women in countries where migration rates are high, as in the case of Turkey. Future surveys should collect more detailed and suitable information on migration for this purpose. A second shortcoming is the absence of external sources of information on Turkish fertility for the period considered. This is why the plausibility of the estimates presented in this study will be better judged when more (and better) data on fertility become available in the near future.

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APPENDIX A

Trends in Cohort- and Cumulative-Period Fertility Rates by Region

Table A.1 Cohort-period fertility rates, West Region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age at period	Survey year	Period (actual year)									
		88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978				18	29	35	45	61	51	30
	1983			14	30	25	36	47	33	33	
	1988		12	25	30	30	33	30	31		
	1993	13	20	28	31	27	38	37			
20-24	1978				163	199	204	239	233	206	
	1983			137	173	177	211	191	187		
	1988		116	166	180	178	180	175			
	1993	108	145	183	189	201	175				
25-29	1978				184	225	262	273	324		
	1983			197	194	232	230	272			
	1988		149	196	205	222	243				
	1993	136	172	206	231	262					
30-34	1978				133	168	180	243			
	1983			121	140	170	177				
	1988		92	144	128	186					
	1993	85	102	138	173						
35-39	1978				77	105	139				
	1983			67	68	89					
	1988		47	60	85						
	1993	38	55	79							
40-44	1978				32	60					
	1983			28	28						
	1988		11	42							
	1993	6	23								
45-49	1978				9						
	1983			6							
	1988		4								
	1993	2									

Table A.2 Cumulative period fertility rates, West Region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age at period	Survey year	Period (actual year)									
		88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978				0.1	0.1	0.2	0.2	0.3	0.3	0.1
	1983			0.1	0.2	0.1	0.2	0.2	0.2	0.2	
	1988		0.1	0.1	0.1	0.2	0.2	0.1	0.2		
	1993	0.1	0.1	0.1	0.2	0.1	0.2	0.2			
20-24	1978				0.9	1.1	1.2	1.4	1.5	1.3	
	1983			0.8	1.0	1.0	1.2	1.2	1.1		
	1988		0.6	1.0	1.0	1.0	1.1	1.0			
	1993	0.6	0.8	1.1	1.1	1.1	1.1				
25-29	1978				1.8	2.3	2.5	2.8	3.1		
	1983			1.7	2.0	2.2	2.4	2.6			
	1988		1.4	1.9	2.1	2.1	2.3				
	1993	1.3	1.7	2.1	2.3	2.4					
30-34	1978				2.5	3.1	3.4	4.0			
	1983			2.3	2.7	3.0	3.3				
	1988		1.8	2.7	2.7	3.1					
	1993	1.7	2.2	2.8	3.1						
35-39	1978				2.9	3.6	4.1				
	1983			2.7	3.0	3.5					
	1988		2.1	3.0	3.1						
	1993	1.9	2.5	3.2							
40-44	1978				3.0	3.9					
	1983			2.8	3.2						
	1988		2.1	3.2							
	1993	1.9	2.6								
45-49	1978				3.1						
	1983			2.9							
	1988		2.2								
	1993	1.9									

Table A.3 Cohort-period fertility rates, South Region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age at period	Survey year	Period (actual year)									
		88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978				13	46	53	74	81	41	40
	1983			25	22	56	45	62	42	61	
	1988		15	35	51	42	61	28	21		
	1993	14	29	31	41	45	42	38			
20-24	1978				170	204	237	278	192	248	
	1983			147	213	242	274	236	258		
	1988		175	194	241	252	187	151			
	1993	117	147	178	227	237	217				
25-29	1978				263	315	314	320	352		
	1983			235	325	322	331	319			
	1988		231	272	304	308	367				
	1993	145	215	257	308	329					
30-34	1978				204	255	285	264			
	1983			236	256	309	244				
	1988		177	216	258	308					
	1993	130	160	206	251						
35-39	1978				156	146	192				
	1983			135	193	201					
	1988		126	174	259						
	1993	66	99	150							
40-44	1978				60	76					
	1983			55	112						
	1988		69	108							
	1993	23	46								
45-49	1978				24						
	1983			44							
	1988		19								
	1993	6									

Table A.4 Cumulative period fertility rates, South Region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age at period	Survey year	Period (actual year)									
		88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978				0.1	0.2	0.3	0.4	0.4	0.2	0.2
	1983			0.1	0.1	0.3	0.2	0.3	0.2	0.3	
	1988		0.1	0.2	0.3	0.2	0.3	0.1	0.1		
	1993	0.1	0.1	0.2	0.2	0.2	0.2	0.2			
20-24	1978				0.9	1.2	1.4	1.8	1.4	1.4	
	1983			0.9	1.2	1.5	1.6	1.5	1.5		
	1988		1.0	1.1	1.5	1.5	1.2	0.9			
	1993	0.7	0.9	1.0	1.3	1.4	1.3				
25-29	1978				2.2	2.8	3.0	3.4	3.1		
	1983			2.0	2.8	3.1	3.3	3.1			
	1988		2.1	2.5	3.0	3.0	3.1				
	1993	1.4	2.0	2.3	2.9	3.1					
30-34	1978				3.3	4.1	4.4	4.7			
	1983			3.2	4.1	4.7	4.5				
	1988		3.0	3.6	4.3	4.6					
	1993	2.0	2.8	3.4	4.1						
35-39	1978				4.0	4.8	5.4				
	1983			3.9	5.0	5.7					
	1988		3.6	4.5	5.6						
	1993	2.4	3.2	4.1							
40-44	1978				4.3	5.2					
	1983			4.2	5.6						
	1988		4.0	5.0							
	1993	2.5	3.5								
45-49	1978				4.4						
	1983			4.4							
	1988		4.1								
	1993	2.5									

Table A.5 Cohort-period fertility rates, Central Region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age at period	Survey year	Period (actual year)									
		88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978				29	59	49	93	83	69	39
	1983			25	37	61	44	84	82	54	
	1988		29	31	50	55	39	46	58		
	1993	15	28	59	57	63	65	47			
20-24	1978				210	253	281	299	301	233	
	1983			179	230	257	250	313	272		
	1988		153	210	202	227	260	228			
	1993	134	188	218	282	253	228				
25-29	1978				245	276	326	377	341		
	1983			262	301	287	354	367			
	1988		185	234	281	312	291				
	1993	166	213	259	273	331					
30-34	1978				199	236	258	284			
	1983			198	206	237	280				
	1988		121	174	198	224					
	1993	107	141	171	220						
35-39	1978				110	163	177				
	1983			101	124	235					
	1988		66	100	99						
	1993	46	78	136							
40-44	1978				51	100					
	1983			49	79						
	1988		30	26							
	1993	25	46								
45-49	1978				26						
	1983			24							
	1988		6								
	1993	6									

Table A.6 Cumulative period fertility rates, Central Region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age at period	Survey year	Period (actual year)									
		88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978				0.1	0.3	0.2	0.5	0.4	0.3	0.2
	1983			0.1	0.2	0.3	0.2	0.4	0.4	0.3	
	1988		0.1	0.2	0.3	0.3	0.2	0.2	0.3		
	1993	0.1	0.1	0.3	0.3	0.3	0.3	0.2			
20-24	1978				1.2	1.6	1.7	2.0	1.9	1.5	
	1983			1.0	1.3	1.6	1.5	2.0	1.8		
	1988		0.9	1.2	1.3	1.4	1.5	1.4			
	1993	0.7	1.1	1.4	1.7	1.6	1.5				
25-29	1978				2.4	2.9	3.3	3.8	3.6		
	1983			2.3	2.8	3.0	3.2	3.8			
	1988		1.8	2.4	2.7	3.0	3.0				
	1993	1.6	2.1	2.7	3.1	3.2					
30-34	1978				3.4	4.1	4.6	5.3			
	1983			3.3	3.9	4.2	4.6				
	1988		2.4	3.2	3.7	4.1					
	1993	2.1	2.8	3.5	4.2						
35-39	1978				4.0	4.9	5.5				
	1983			3.8	4.5	5.4					
	1988		2.8	3.7	4.1						
	1993	2.3	3.2	4.2							
40-44	1978				4.2	5.4					
	1983			4.1	4.9						
	1988		2.9	3.9							
	1993	2.5	3.5								
45-49	1978				4.3						
	1983			4.2							
	1988		2.9								
	1993	2.5									

Table A.7 Cohort-period fertility rates, North Region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age at period	Survey year	Period (actual year)									
		88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978				25	89	73	75	77	63	44
	1983			18	37	61	51	57	40	62	
	1988		14	30	47	35	38	48	33		
	1993	18	13	42	49	42	33	53			
20-24	1978				249	305	272	333	244	226	
	1983			198	281	300	236	335	213		
	1988		144	199	203	212	215	183			
	1993	128	160	234	260	238	303				
25-29	1978				305	331	388	356	352		
	1983			284	319	294	347	346			
	1988		184	271	271	299	307				
	1993	185	220	268	317	315					
30-34	1978				258	271	322	333			
	1983			203	215	275	291				
	1988		111	162	182	244					
	1993	105	157	233	177						
35-39	1978				166	213	304				
	1983			122	150	176					
	1988		40	99	86						
	1993	65	84	76							
40-44	1978				122	130					
	1983			39	82						
	1988		33	61							
	1993	38	18								
45-49	1978				37						
	1983			0							
	1988		6								
	1993	4									

Table A.8 Cumulative period fertility rates, North Region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age at period	Survey year	Period (actual year)									
		88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978				0.1	0.4	0.4	0.4	0.4	0.3	0.2
	1983			0.1	0.2	0.3	0.3	0.3	0.2	0.3	
	1988		0.1	0.1	0.2	0.2	0.2	0.2	0.2		
	1993	0.1	0.1	0.2	0.2	0.2	0.2	0.3			
20-24	1978				1.4	2.0	1.7	2.0	1.6	1.4	
	1983			1.1	1.6	1.8	1.4	2.0	1.3		
	1988		0.8	1.1	1.3	1.2	1.3	1.2			
	1993	0.7	0.9	1.4	1.5	1.4	1.7				
25-29	1978				2.9	3.6	3.7	3.8	3.4		
	1983			2.5	3.2	3.3	3.2	3.7			
	1988		1.7	2.5	2.6	2.7	2.8				
	1993	1.7	2.0	2.7	3.1	3.0					
30-34	1978				4.2	5.0	5.3	5.5			
	1983			3.5	4.3	4.6	4.6				
	1988		2.3	3.3	3.5	3.9					
	1993	2.2	2.8	3.9	4.0						
35-39	1978				5.0	6.0	6.8				
	1983			4.1	5.0	5.5					
	1988		2.5	3.8	3.9						
	1993	2.5	3.2	4.3							
40-44	1978				5.6	6.7					
	1983			4.3	5.4						
	1988		2.6	4.1							
	1993	2.7	3.3								
45-49	1978				5.8						
	1983			4.3							
	1988		2.7								
	1993	2.7									

Table A.9 Cohort-period fertility rates, East Region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age at period	Survey year	Period (actual year)									
		88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978				43	109	86	93	107	98	39
	1983			34	83	92	100	108	93	71	
	1988		20	50	71	71	80	68	66		
	1993	18	55	77	54	77	44	61			
20-24	1978				256	333	361	355	296	273	
	1983			246	316	325	351	316	286		
	1988		142	238	255	278	268	231			
	1993	156	233	290	351	241	249				
25-29	1978				332	393	401	394	439		
	1983			307	394	401	349	402			
	1988		236	333	381	398	364				
	1993	228	335	387	388	415					
30-34	1978				278	345	401	422			
	1983			301	372	344	355				
	1988		231	252	361	359					
	1993	194	280	372	362						
35-39	1978				216	304	310				
	1983			241	251	304					
	1988		144	182	232						
	1993	137	261	275							
40-44	1978				149	195					
	1983			121	155						
	1988		70	140							
	1993	92	158								
45-49	1978				56						
	1983			71							
	1988		50								
	1993	29									

Table A.10 Cumulative period fertility rates, East Region, 1978 TFS, 1983 TFHS, 1988 TPHS, and 1993 TDHS

Age at period	Survey year	Period (actual year)									
		88-93	83-88	78-83	73-78	68-73	63-68	58-63	53-58	48-53	43-48
15-19	1978				0.2	0.5	0.4	0.5	0.5	0.5	0.2
	1983			0.2	0.4	0.5	0.5	0.5	0.5	0.4	
	1988		0.1	0.2	0.4	0.4	0.4	0.3	0.3		
	1993	0.1	0.3	0.4	0.3	0.4	0.2	0.3			
20-24	1978				1.5	2.2	2.2	2.2	2.0	1.9	
	1983			1.4	2.0	2.1	2.3	2.1	1.9		
	1988		0.8	1.4	1.6	1.7	1.7	1.5			
	1993	0.9	1.4	1.8	2.0	1.6	1.5				
25-29	1978				3.2	4.2	4.2	4.2	4.2		
	1983			2.9	4.0	4.1	4.0	4.1			
	1988		2.0	3.1	3.5	3.7	3.6				
	1993	2.0	3.1	3.8	4.0	3.7					
30-34	1978				4.5	5.9	6.2	6.3			
	1983			4.4	5.8	5.8	5.8				
	1988		3.1	4.4	5.3	5.5					
	1993	3.0	4.5	5.6	5.8						
35-39	1978				5.6	7.4	7.8				
	1983			5.6	7.1	7.3					
	1988		3.9	5.3	6.5						
	1993	3.7	5.8	7.0							
40-44	1978				6.4	8.4					
	1983			6.3	7.9						
	1988		4.2	6.0							
	1993	4.1	6.6								
45-49	1978				6.7						
	1983			6.6							
	1988		4.5								
	1993	4.3									

APPENDIX B

Trends in Age-Period Fertility Rates by Region

Table B.1 Age-specific period fertility rates (per 1000), and total fertility rates by age 35 and 50, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Survey	Years preceding survey	Approximate reference date	Age group 15-19	20-24	25-29	30-34	35-39	40-44	45-49	TFR (35)	TFR (50)
1978 TFS	0	1978.2	94	252	229	154	96	41	3	3.65	4.34
	4-7	1972.7	158	290	279	202	116	-	-	4.64	-
	8-11	1968.7	156	304	266	210	143	-	-	4.68	-
1983 TFHS	0	1983.2	71	235	235	145	83	24	11	3.42	4.02
	4-7	1977.7	110	285	251	166	104	-	-	4.06	-
	8-11	1973.7	131	302	258	177	126	-	-	4.34	-
1988 TPHS	0	1988.2	60	206	177	100	47	20	0	2.72	3.05
	4-7	1982.7	91	239	207	126	67	-	-	3.31	-
	8-11	1978.7	117	256	229	156	87	-	-	3.79	-
1993 TDHS	0	1993.2	56	179	151	94	39	12	0	2.40	2.65
	4-7	1987.7	78	209	175	106	59	-	-	2.84	-
	8-11	1983.7	107	250	205	141	91	-	-	3.51	-

Table B.2 Age-specific period fertility rates (per 1000), and total fertility rates by age 35 and 50, West Region, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Survey	Years preceding survey	Approximate reference date	Age group 15-19	20-24	25-29	30-34	35-39	40-44	45-49	TFR (35)	TFR (50)
1978 TFS	0	1978.2	56	228	155	83	51	10	0	2.61	2.91
	4-7	1972.7	95	218	195	113	62	37	0	3.10	3.60
	8-11	1968.7	113	255	187	156	91	26	0	3.55	4.13
1983 TFHS	0	1983.2	41	172	176	90	42	7	0	2.40	2.64
	4-7	1977.7	88	223	174	102	42	19	0	2.94	3.24
	8-11	1973.7	82	206	182	88	58	33	0	2.79	3.24
1988 TPHS	0	1988.2	50	178	145	57	19	8	0	2.15	2.29
	4-7	1982.7	73	201	160	91	39	15	0	2.63	2.90
	8-11	1978.7	89	204	174	110	49	48	0	2.88	3.37
1993 TDHS	0	1993.2	50	161	132	51	12	0	0	1.96	2.03
	4-7	1987.7	61	171	133	65	28	5	-	2.14	2.81
	8-11	1983.7	76	213	148	91	56	37	-	2.64	3.10

Table B.3 Age-specific period fertility rates (per 1000), and total fertility rates by age 35 and 50, South Region, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Survey	Years preceding survey	Approximate reference date	Age group 15-19	20-24	25-29	30-34	35-39	40-44	45-49	TFR (35)	TFR (50)
1978 TFS	0	1978.2	50	206	242	119	82	62	0	3.08	3.80
	4-7	1972.7	116	270	297	228	95	68	0	4.55	5.36
	8-11	1968.7	130	281	252	180	130	0	0	4.21	4.86
1983 TFHS	0	1983.2	76	275	234	209	88	19	0	3.97	4.51
	4-7	1977.7	80	254	283	248	145	44	0	4.32	5.27
	8-11	1973.7	124	305	294	278	153	80	0	5.00	6.16
1988 TPHS	0	1988.2	51	274	298	154	51	57	0	3.89	4.43
	4-7	1982.7	85	245	259	194	127	86	192	3.92	5.95
	8-11	1978.7	123	264	276	207	178	69	0	4.35	5.59
1993 TDHS	0	1993.2	54	125	134	102	42	17	0	2.07	2.37
	4-7	1987.7	76	173	188	105	50	26	0	2.71	3.09
	8-11	1983.7	97	228	216	137	106	27	0	3.39	4.06

Table B.4 Age-specific period fertility rates (per 1000), and total fertility rates by age 35 and 50, Central Region, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Survey	Years preceding survey	Approximate reference date	Age group 15-19	20-24	25-29	30-34	35-39	40-44	45-49	TFR (35)	TFR (50)
1978 TFS	0	1978.2	106	248	222	164	95	12	0	3.70	4.23
	4-7	1972.7	179	288	275	178	115	51	0	4.60	5.43
	8-11	1968.7	143	310	283	194	123	0	0	4.64	5.26
1983 TFHS	0	1983.2	79	267	242	160	62	37	0	3.74	4.23
	4-7	1977.7	97	287	255	141	86	64	0	3.90	4.65
	8-11	1973.7	152	323	268	180	171	0	0	4.61	5.47
1988 TPHS	0	1988.2	89	215	159	69	36	11	0	2.66	2.89
	4-7	1982.7	102	257	192	103	55	15	0	3.27	3.62
	8-11	1978.7	113	265	230	151	72	42	0	3.80	4.37
1993 TDHS	0	1993.2	55	174	130	85	40	5	0	2.22	2.44
	4-7	1987.7	83	238	165	88	39	23	0	2.87	3.18
	8-11	1983.7	125	242	208	115	88	76	0	3.45	4.27

Table B.5 Age-specific period fertility rates (per 1000), and total fertility rates by age 35 and 50, North Region, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Survey	Years preceding survey	Approximate reference date	Age group 15-19	20-24	25-29	30-34	35-39	40-44	45-49	TFR (35)	TFR (50)
1978 TFS	0	1978.2	68	333	290	279	89	66	0	4.85	5.62
	4-7	1972.7	190	367	311	264	158	71	0	5.66	6.80
	8-11	1968.7	195	321	334	258	193	316	0	5.54	8.08
1983 TFHS	0	1983.2	59	223	268	100	84	0	0	3.25	3.67
	4-7	1977.7	118	357	249	180	106	39	0	4.52	5.24
	8-11	1973.7	147	370	252	159	108	211	0	4.64	6.23
1988 TPHS	0	1988.2	67	261	177	67	39	0	0	2.86	3.05
	4-7	1982.7	86	244	217	103	55	25	0	3.25	3.65
	8-11	1978.7	129	274	212	134	73	51	0	3.75	4.37
1993 TDHS	0	1993.2	61	252	183	93	31	10	0	2.94	3.15
	4-7	1987.7	49	201	171	98	58	3	0	2.59	2.90
	8-11	1983.7	99	269	238	127	52	61	0	3.66	4.22

Table B.6 Age-specific period fertility rates (per 1000), and total fertility rates by age 35 and 50, East Region, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Survey	Years preceding survey	Approximate reference date	Age group 15-19	20-24	25-29	30-34	35-39	40-44	45-49	TFR (35)	TFR (50)
1978 TFS	0	1978.2	131	282	328	215	176	115	18	4.78	6.33
	4-7	1972.7	246	390	391	319	206	109	0	6.73	8.30
	8-11	1968.7	246	390	333	327	272	0	0	6.48	7.84
1983 TFHS	0	1983.2	114	291	319	211	208	65	89	4.68	6.49
	4-7	1977.7	183	375	365	293	236	101	0	6.09	7.77
	8-11	1973.7	201	407	388	299	236	291	0	6.47	9.11
1988 TPHS	0	1988.2	45	157	176	223	126	42	0	3.00	3.84
	4-7	1982.7	115	293	294	189	116	92	417	4.45	7.58
	8-11	1978.7	170	349	328	242	174	299	0	5.44	7.81
1993 TDHS	0	1993.2	65	234	228	199	106	49	8	3.63	4.40
	4-7	1987.7	120	295	280	246	191	78	0	4.71	6.05
	8-11	1983.7	166	357	310	331	228	58	0	5.82	7.25

APPENDIX C

Trends in Contraceptive Use by Specific Method by Region

Table C.1 Percent distribution of married women by specific method of contraception used, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Contraceptive Method Use Status	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS
Not Using	62.0	49.0	36.3	37.4
Pill	6.1	7.5	6.1	4.9
IUD	3.0	7.4	14.2	18.8
Injectable	0.3	0.2	0.0	0.1
Diaphragm/Tablet (position)	0.3	2.4	1.9	1.2
Condom	3.1	4.1	7.3	6.6
Female Sterilization	0.4	1.1	1.7	2.9
Male Sterilization	0.2	0.0	0.1	0.0
Periodic Abstinence	1.0	1.2	3.6	1.0
Withdrawal	16.8	25.0	25.7	26.2
Douche	4.3	1.6	2.5	0.6
Folk Methods	2.5	0.7	0.5	0.3

Table C.2 Percent distribution of married women by specific method of contraception used, West Region, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Contraceptive Method Use Status	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS
Not Using	46.9	34.6	29.9	28.5
Pill	8.4	9.8	6.8	6.2
IUD	2.7	7.3	16.2	18.8
Injectable	0.2	0.0	0.1	0.0
Diaphragm/Tablet	0.5	2.9	1.7	1.2
Condom	4.6	6.2	7.9	8.4
Female Sterilization	0.3	0.8	2.3	2.7
Male Sterilization	0.1	0.0	0.1	0.0
Periodic Abstinence	1.1	2.1	4.9	1.3
Withdrawal	24.0	32.3	26.7	31.5
Douche	7.6	2.8	3.0	1.1
Folk Methods	3.6	1.2	0.5	0.3

Table C.3 Percent distribution of married women by specific method of contraception used, South Region, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Contraceptive Method Use Status	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS
Not Using	64.5	53.4	46.9	37.2
Pill	6.1	7.6	4.2	4.2
IUD	3.9	6.5	14.8	20.9
Injectable	0.6	0.2	0.0	0.2
Diaphragm/Tablet	0.0	1.8	2.0	2.2
Condom	3.1	4.3	5.8	6.1
Female Sterilization	0.0	1.6	1.3	3.3
Male Sterilization	0.0	0.0	0.0	0.0
Periodic Abstinence	1.0	0.5	3.0	1.0
Withdrawal	15.6	23.1	18.8	24.7
Douche	2.7	0.8	2.7	0.2
Folk Methods	2.5	0.1	0.3	0.1

Table C.4 Percent distribution of married women by specific method of contraception used, Central Region, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Contraceptive Method Use Status	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS
Not Using	63.4	48.4	31.8	37.3
Pill	6.4	7.0	6.4	4.3
IUD	4.8	10.9	14.5	21.9
Injectable	0.4	0.1	0.0	0.1
Diaphragm/Tablet	0.4	3.1	2.3	0.9
Condom	2.6	3.1	8.6	6.1
Female Sterilization	0.8	0.9	1.3	3.1
Male Sterilization	0.3	0.1	0.2	0.1
Periodic Abstinence	1.4	1.2	4.4	1.1
Withdrawal	13.1	22.8	26.9	23.7
Douche	3.6	1.5	3.0	0.7
Folk Methods	2.7	0.9	0.5	0.7

Table C.5 Percent distribution of married women by specific method of contraception used, North Region, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Contraceptive Method Use Status	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS
Not Using	63.1	44.9	34.9	35.8
Pill	4.7	6.1	4.5	5.2
IUD	1.5	7.3	9.0	11.5
Injectable	0.0	0.0	0.0	0.1
Diaphragm/Tablet	0.2	2.7	2.8	1.6
Condom	3.2	3.0	7.9	7.1
Female Sterilization	0.6	2.5	1.8	4.3
Male Sterilization	0.4	0.0	0.0	0.0
Periodic Abstinence	0.4	0.4	1.8	0.4
Withdrawal	19.5	31.8	34.9	33.6
Douche	4.0	1.0	0.7	0.2
Folk Methods	2.3	0.3	1.7	0.2

Table C.6 Percent distribution of married women by specific method of contraception used, East Region, 1978 TFS, 1983 TFHS, 1988 TPHS and 1993 TDHS

Contraceptive Method Use Status	1978 TFS	1983 TFHS	1988 TPHS	1993 TDHS
Not Using	81.1	75.9	49.1	57.7
Pill	3.1	4.6	6.8	3.6
IUD	1.3	3.7	12.0	16.5
Injectable	0.4	0.6	0.1	0.1
Diaphragm/Tablet	0.0	0.9	0.8	0.6
Condom	1.3	2.1	5.0	3.7
Female Sterilization	0.2	0.4	1.4	1.8
Male Sterilization	0.1	0.0	0.0	0.0
Periodic Abstinence	0.4	0.6	1.5	0.3
Withdrawal	9.8	11.0	21.3	15.6
Douche	1.2	0.2	1.8	0.0
Folk Methods	1.1	0.1	0.1	0.1

WOMEN'S STATUS AND FERTILITY IN TURKEY

Banu Akadlı Ergöçmen

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1 INTRODUCTION

The relationship between women's status and fertility has been the subject of numerous studies and is still of considerable interest to researchers around the world. Over two decades ago, it was stated in the World Population Plan of Action that one important way to moderate fertility was through "the full integration of women in the development process, particularly by means of their greater participation in educational, social, economic and political opportunities, and especially by means of the removal of obstacles to their employment in the nonagricultural sector wherever possible" (United Nations, 1975). More recently, the Programme of Action of the International Conference on Population and Development (ICPD) held in Cairo in 1994 called for gender equity and equality to enable women to realize their full potential. It was stated that the empowerment of women and improvement of their status are important ends in themselves and are essential for the achievement of sustainable development (United Nations, 1995). The empowerment of women has been linked to women's ability to control their own fertility which has a strong impact on improving their status at political, social, economic and health levels. A woman's decision on whether to bear children, and when and how many children to bear is influenced by a number of circumstances which are directly related to a woman's role and status in the family and society. Thus, women's overall status greatly affects the degree of control she has over her own fertility. The possibility to decide when and whether to conceive children is a crucial element in being able to choose the kind of life a woman wants to live.

Especially in societies that experience a transformation from traditional to modern living, the changing status of women in the society and family usually results in a decrease in desire for pregnancy. The rise in the educational level of women, their work outside the home, and development of extra-familial activities lead women to prefer a limited number of children and at the same time create the possibility for women to have a greater voice in the number and timing of children. Women's education, work force participation, and decision-making powers within marriage are only some of the factors which determine the status of women to a large extent and which in turn affect fertility behaviour.

In Turkey, the status of women plays a very important role in the demographic transition of the country. The rapid social and economic changes that Turkish society has undergone has resulted in changes at the demographic level. For instance, in Turkey a fertility transition has been experienced in the last two decades. During the period between 1978 and 1993, the total fertility rate in Turkey has declined by 37 percent from 4.3 to 2.7 births per woman (Mott et al., 1994). The onset of the decline was due to the change in governmental policy in 1965 from a pronatalist policy to one favouring limited population growth. In 1983, further liberalization was obtained by the legalization of voluntary surgical contraception and induced abortions up to the tenth week of pregnancy. In addition to these liberalizations, the society as a whole was experiencing social and economic transformations leading to changes in women's status, which in turn has affected demographic behaviour, notably fertility behaviour.

On the other hand, despite the successful modernization process, Turkey is mainly patriarchal on the social level. Therefore, women in Turkey live in a highly heterogeneous social and cultural structure where "modern" and "traditional" exist together.

In view of these considerations, the present study seeks to identify the possible impact of women's status on marital fertility behaviour in Turkey. The 1993 Turkish Demographic and Health Survey (TDHS), in addition to its widely demographic nature covering issues like fertility, family planning, and mother and child health, also enables the study of women's status mainly at a descriptive level. The first topic discussed in the study concerns the socio-economic, cultural and legal milieu within which the status of women is established. Secondly, the status of women in Turkey is studied at a descriptive level, and finally, the study concentrates on analysing the factors affecting fertility behaviour in relation to women's status.

2 FRAMEWORK OF THE STUDY

2.1 Data Source

In this study, 1993 TDHS data is analysed. The TDHS was conducted as part of the worldwide Demographic and Health Surveys (DHS) programme. The TDHS had a nationally representative sample of 8,619 households and 6,519 ever-married women younger than 50 years of age. A weighted, multistage, stratified cluster sampling approach was used in the selection of the TDHS sample. The TDHS provided information on fertility and childhood mortality, family planning awareness, approval and use, and basic indicators of maternal and child health. The survey was designed so that a variety of characteristics would be analysed for various domains like Turkey as a whole, urban and rural areas (each as a separate domain), and each of the five major regions of the country.

Two main types of questionnaires were used to collect the TDHS data: the Household Questionnaire and the Individual Questionnaire for ever-married women of reproductive ages. In addition to these questionnaires, a Cluster Questionnaire was also used with the aim of collecting information on the general economic and social environment of each cluster of the TDHS sample. The present study mainly relies on the information obtained from the Individual Questionnaire. Only the information related to the socio-economic position of the household is obtained from the Household Questionnaire.

The study is based on ever-married women age 15-49 years at the time of the survey in August and September of 1993. This period covers women born between 1944 and 1978 enabling a relatively longer fertility period for the older cohorts compared to the younger ones. Data on background characteristics, nuptiality, fertility, and country-specific questions on decision making and women's opinions of themselves are obtained from the Individual Questionnaire. Information about housing characteristics like sanitation facilities and availability of durable consumer goods is obtained from the Household Questionnaire.

2.2 Conceptual Approach

The concept of *women's status* is widely used and has been central to many social, economic, and demographic studies. Concern with *status* has a venerable intellectual history in the social sciences. Once a term of "legal or general condition," *status* has become an operational term in its conventional modern use (Williams, 1976). In the social sciences, *status* is a more precise and measurable term, especially in relation to women, in which case a more complex nature is attained.

Women have significant economic and social responsibilities both for the family and for the society. In performing these responsibilities, a woman plays many roles and holds a configuration of statuses associated with these roles (Oppong and Abu, 1985). Since status is not a unidimensional concept and since it is difficult to classify as a single item index, women's status must be regarded as a multiple or complex array of different components which vary from one society to another.

No single indicator can capture the multiple dimensions of the position of women. Therefore, the measurement of women's status is recognized to be a highly complex issue and the indicators that are used to define the status of women are usually proxies. Typically, variables such as educational attainment and labor force participation are used as proxies for evaluating women's position in the family and in the economy (Safilios-Rothschild, 1986, 1990). However, these indicators are usually considered to be inadequate measures of women's status because they do not fully involve all the dimensions of women's roles, and because these variables are a reflection of a number of underlying factors which do not represent the social institutions of gender (Mason, 1994).

Since the study is based on standardized demographic survey data, the variables available within this kind of data are used as proxies for the status of women. Respondent's education is preferred as one of the status variables since it is thought to have the most pervasive impact on fertility. The relationship between education and fertility has been analysed by a number of studies and it has been confirmed that women's education tends to have a negative relationship with fertility especially in more urbanized countries (Cochrane, 1979, 1983). Also, in a recent study, where the relationship between women's education and fertility was examined with DHS data from 26 countries, it was also confirmed that higher education is consistently associated with lower fertility (Martin, 1995). However, there are also views which put some doubt to the negative influence of education on fertility. For instance, according to Cochrane (1979), the expected inverse relationship was not found in several developing countries, and instead, an inverted U-shaped relationship existed.

Education is considered essential in improving women's status since it provides real and lasting improvements in women's lives. Generally, more educated women have better health, better living conditions, and better life opportunities than their less educated counterparts. Education, by providing the possibility of gainful employment, puts women in a relatively better position both economically and socially. In addition to exposing women to new and modern ideas, education also provides the possibility of establishing an egalitarian status within the marital relationship. Moreover, educated women are expected to control their fertility more safely and effectively.

Therefore in this study, education is used as a proxy for measuring women's status. Education is analysed in terms of years of schooling completed by creating a categorical variable with five educational groups as follows: none, 1-4 years, 5-7 years, 8-10 years, and 11 or more years.

Women's labour force participation is also considered as one of the significant indicators of women's status. In spite of the fact that type of employment and amount of control over their own earnings are important factors in determining the status of women, just being economically productive is believed to have some positive effects upon women's lives. Earning their own money and being exposed to broader knowledge of the outside world gives women a certain kind of liberty and improves their self-image. In this study, women's participation in the labour force is defined as whether the respondent is currently working in a paid job or not. In addition to this, the existence of direct social security has been taken into account in order to guarantee that the woman works for cash.

Woman's working status before marriage, on the one hand, largely determines her age at first marriage, which in turn affects her marital fertility; on the other hand, it gives her the opportunity to be exposed to the outside world. For this purpose, "premarital work status" is considered as a separate variable.

Age difference and educational gap between spouses, type of arrangement of marriage, participation in marriage decision, existence of civil marriage, involvement in domestic decision making and opinions of women about themselves have also been used as status related variables. Birth cohorts, marital status, and survival status of children are used as control variables. Also, variables like availability of durable consumer goods and sanitary condition of the house have been utilized for the assessment of the socio-economic status of the household.

Taking the diverse geographical, climatic, cultural, social and economic differentials in different parts of the country into account, region and urban/rural residence are used as background variables. The country is conventionally divided into five regions—West, South, Central, North and East—which reflect, to some extent, different socio-economic levels and demographic conditions. For instance, the West Region is the most densely settled, the most industrialized, and the most socio-economically advanced region of the

country; whereas, the East Region is the least developed part of the country with poor industrial production, limited potential for agriculture, and animal husbandry used as the main means of subsistence.

For purposes of this study, fertility will be measured in terms of mean number of children ever born to examine the changing fertility by age group of the mother. A woman who has reached reproductive age will have borne a certain number (perhaps zero) of children at any given time; these data are referred to as "children ever born" (Pressat and Wilson, 1985).

3 OVERVIEW OF THE STATUS OF WOMEN IN TURKEY

3.1 Legislation

The commitment towards achieving and maintaining women's rights should be reflected in the legal system of the country. Naturally, it is a necessity of social justice to bring some regulations and exceptions to the legislation in order to prevent gender differences from being transformed into injustice and inequality.

In this context, when the Constitution, the Civil Code, the Criminal Code, the Labour Law, and the Turkish Citizenship Law are examined, it is observed that the principle of "equality" finds its most reliable and highest support in the Constitution. According to Article 10 of the Constitution of the Republic of Turkey, citizens cannot be discriminated against on the basis of their gender. Furthermore, Article 12 of the Constitution states that all individuals have personal, inviolable, untransferable vested basic rights and liberties.

Despite the solid legal foundation for equality between the sexes, there are articles in the individual laws which contradict this principle. Actually, in the Civil Code, although there is no differentiation between the rights and responsibilities of unmarried men and women (except for the marriage age which is not a legal difference but an evaluation of physiological development), these equal rights change within marriage to the disadvantage of married women, bringing women down to a secondary position. For example, according to the Civil Code, the husband is the head of the marital union and is in charge of the choice of residence. The Civil Code states that the marital union is represented by the husband, and the woman only has the right to represent the union for the permanent needs of the house. Nevertheless, a Draft Amendment of the Civil Code has been submitted to Parliament, and if the draft is ratified, a number of inequalities will be eliminated.

On the other hand, there are two types of regulations with regard to women in the labour force. The first set of regulations prevent women from undertaking dangerous work, while the second set relate to protective measures of maternal functions of women.

3.2 National Mechanisms

There has been a broad change in the organizational approach to women's affairs in Turkey in the last decade. Since 1985, issues related to women's status have been integrated into the components of social development that take place in the Five-year Development Plans. In 1985, a "Women's Sector" was also incorporated into the activities of the State Planning Organization which determines national targets for education, teaching, employment, and health, and formulates strategies, measures, and policies in accordance with these targets (UNFPA, 1995).

In 1990, in conformity with both international resolutions and the targets and policies of the Sixth Five-year Development Plan, the General Directorate on the Status and Problems of Women was established as a national mechanism for the enhancement of women's status. In 1991, the General Directorate became attached to the Primary Ministry and continued its functions within the Ministry of State responsible for Women's Affairs and Social Services. Finally in 1993, it became incorporated into the newly created Undersecretariat for Women's Affairs and Social Services, which consists of two General Directorates: General Directorate of Family and Social Research and General Directorate of Social Services and Protection of Children (UNFPA, 1995).

Furthermore, the Social Structure and Women Statistics Department of the State Institute of Statistics was established in 1993 with the purpose of generating and making available gender-differentiated statistics. There are also volunteer women's organizations which are specifically women-oriented and sensitive to women's issues. Also, universities have opened centres and programmes to contribute to the enhancement of women's status through scientific research.

3.3 Participation in Political Decision Making

Equality between the sexes was introduced in the legal structure through the reforms implemented following the declaration of the Republic, and opportunities were provided for effective participation of women in public life. One of the most important steps in this respect was recognizing women's right to vote and eligibility to be elected as early as 1934 (Government of Turkey and UNICEF, 1991).

In spite of relatively early access to participation in the political decision-making process, women in Turkey have limited political involvement in terms of representation in Parliament. The percent of women parliamentarians has never exceeded 4.6 percent since the extension of franchise to women. However, women participate at all levels of elections as electorates, even though their participation is relatively less compared to that of men (Government of Turkey and UNICEF, 1991).

When participation in public administration is considered, it is observed that a highly qualified group of women participate since public administration offers a major employment opportunity for women with higher education. Between 1938 and 1990, the number of female civil servants increased approximately 26.5 times, whereas this ratio is 6.3 for men.

3.4 Education

Since the foundation of the Turkish Republic in 1923, the basic principles in education cited by the National Education Primary Code have been the universality of services and the equality of opportunities. In addition, there are also principles like coeducation and the right to education by all. Primary education, which lasts five years, is compulsory for every Turkish child who reaches age six and is offered free of charge at public schools.

In spite of these principles, the statistics show that women still lag behind men in literacy and level of education. The most significant indicator of gender inequality in Turkey is the disparity between the literacy rates of males and females (Figure 3.1). According to the 1990 Census, 11 percent of males and 28 percent of females at age six and above were illiterate indicating a literacy differential of 17 percent. The disparity between the literacy rates is even more striking in rural and urban settlements (Figure 3.2). The literacy rate for women living in urban settlements was 79 percent and it was 63 percent for their counterparts living in rural settlements. On the other hand, the difference between the literacy rates of males and females was 14 percent in urban settlements whereas it was 20 percent in rural ones.

Primary education enrollment figures reflect a somewhat more egalitarian situation since nearly all boys and girls attend primary school. For example, the schooling ratio in 1994-95 was 91 percent for boys and 87 percent for girls. After primary school, the gender gap begins to manifest itself. Although the percentage of dropouts at every level of the educational system is high, the figures are more striking for girls. For instance, in the 1994-95 academic year, only 53 percent of girls have continued on to secondary school after completing their primary school education, whereas this rate was 78 percent for boys.

Women's participation in higher education has shown an increase over time, but there is still a great disparity in higher education between males and females. In the 1990-91 academic year, the proportion of women participating in higher education was 33 percent.

3.5 Economic Participation

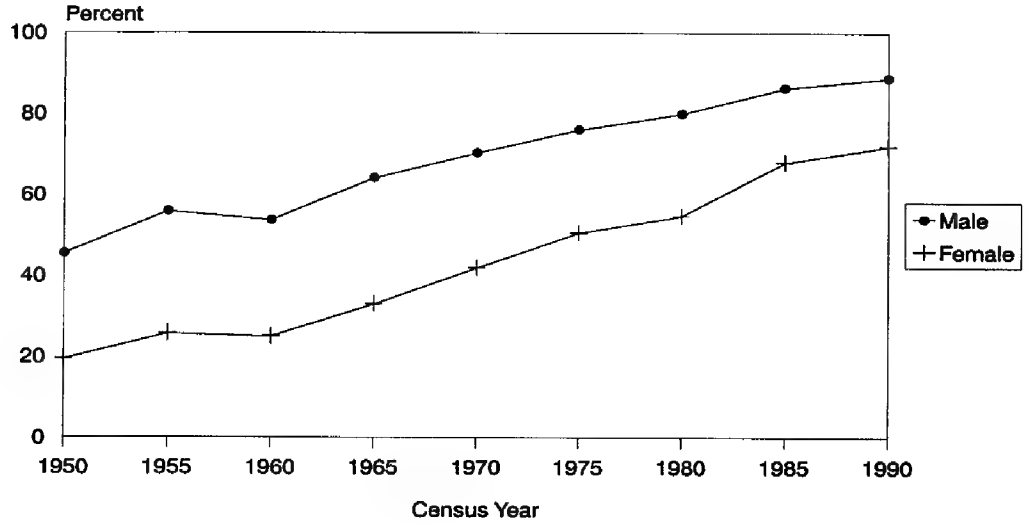
The level of economic activity of women is rather low in Turkey, and a disparity in the economic activity levels between the sexes has always existed. In general, the proportion of working women has always been far behind the proportion of working men due to the gap in level of education and training as well as cultural constraints. As of April 1994, 33 percent of women above the age of 15 participate in the labour force. Generally, the number of women who work is about half the number of men who work in Turkey. Women are intensively employed in agriculture with 74 percent working in this sector, while 10 percent of working women work in the industrial sector (State Planning Organization, 1995).

The proportion of working women has been declining in Turkey (Figure 3.3). Due to the process of industrialization which parallels the general decrease in the overall agricultural work force, the proportion of the total female labour force working in agriculture has also dropped over the years. However, the share of women in the agricultural sector has, in fact, increased. For instance, the proportion of women among agricultural workers increased from 54 percent in 1985 to 55 percent in 1990. This is the only employment sector where women are represented even higher than their share in the general population.

During the past four decades, as a result of rural to urban migration, women who are economically active in the agricultural sector have been withdrawn from the labour market. The low contribution of women to economic activities other than agriculture is due to their relatively low level of education which is not appropriate for the employment opportunities of urban areas. On the other hand, the participation of women in the urban economy is not reflected, since these women (many of whom are unskilled) usually work as domestic workers or do piece work at their homes without the protection of social security. The women in Turkey are generally in the position of family worker. Of the total employed women in the country, two-thirds of women are unpaid family workers and 20 percent are wage and salary earners (State Planning Organization, 1995).

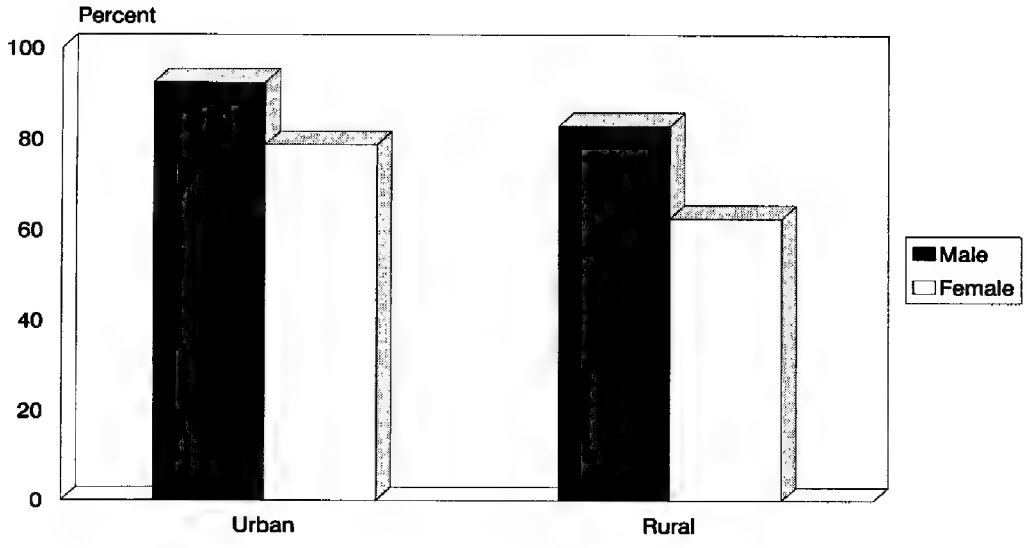
In urban settlements, the highest participation rate in the labour force is for the age group 15-34, whereas in rural settlements, the 15-54 age group has the highest concentration in the labour force. Although the proportion of economically active women is very low in urban areas, parallel to the increasing level of education, total women's participation in the urban labour force is increasing. For instance in 1992, while 7 percent of illiterate women were participating in the labour force (which was 52 percent for men), the gap between the two sexes was less between women with university education (83 percent) and men with university education (89 percent). On the other hand, in the urban settlements, being divorced is another factor in participating in the labour force. Half of divorced women were economically active in the urban areas (SIS, 1994).

Figure 3.1 Trends in Literacy Rates by Sex, 1950-1990



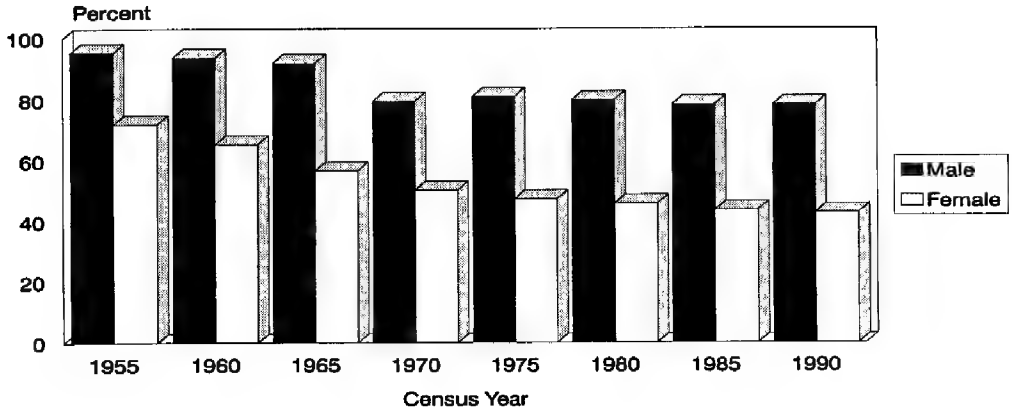
Source: State Institute of Statistics, 1993

Figure 3.2 Literacy Rates by Urban-Rural Residence, 1990



Source: State Institute of Statistics, 1993

Figure 3.3 Percent Distribution of Economically Active Population by Sex, 1955-1990



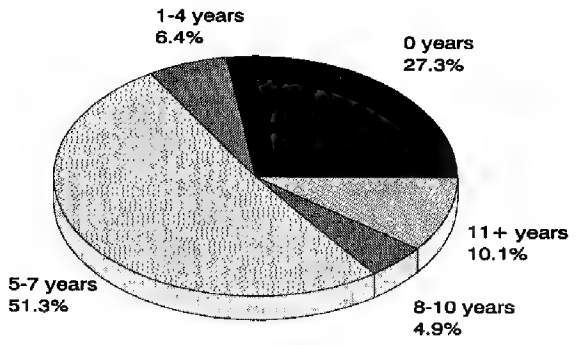
Source: State Institute of Statistics, 1993
Note: For 1955-1965, percentages were calculated for the population age 15 years and above.

4 CHARACTERISTICS OF WOMEN

4.1 Educational Attainment

Figure 4.1 provides a general overview of the educational attainment of ever-married women at reproductive ages. Five educational groups have been considered by combining single years of completed education. According to this grouping, the percentage of ever-married women who have never attended school is almost three times more than the percentage of women with 11 or more years of education. One-half of the women have had 5-7 years of schooling.

Figure 4.1 Percent Distribution of Women by Years of Education, 1993



Overall, ever-married women in Turkey have 4.4 mean years of education which is lower than the compulsory period of five years in primary education (Table 4.1). Women's education in Turkey varies on the basis of the woman's age, as well as region, and place of residence. As expected, women in the oldest age groups (40-44 and 45-49) have the lowest mean number of years of education. A significant finding is the low mean (4.6 years) for the youngest age group indicating women's involvement into marriage at an early age with a low level of education. Regional differences in education are very much marked between the West and East Regions, with a disadvantage of three years less for women in the East Region. Women living in the West Region have the highest mean years of education (5.3), whereas those living in the East Region have the lowest mean (2.5) compared to the other regions. The remaining three regions have almost similar means (4.0-4.6). Also, there is a pronounced difference between the mean years of schooling for women living in urban and rural areas; those living in rural areas (3.1) are two years less educated compared to those living in urban areas (5.1).

The depressing effect of education on fertility can be observed by examining the completed fertility of women ages 40-49. Overall, women who are at the end of their reproductive ages have completed their fertility with 4.7 children. The variation in the mean numbers of children ever born manifests itself at every

Table 4.1 Mean years of education for ever-married women by selected background characteristics, Turkey 1993

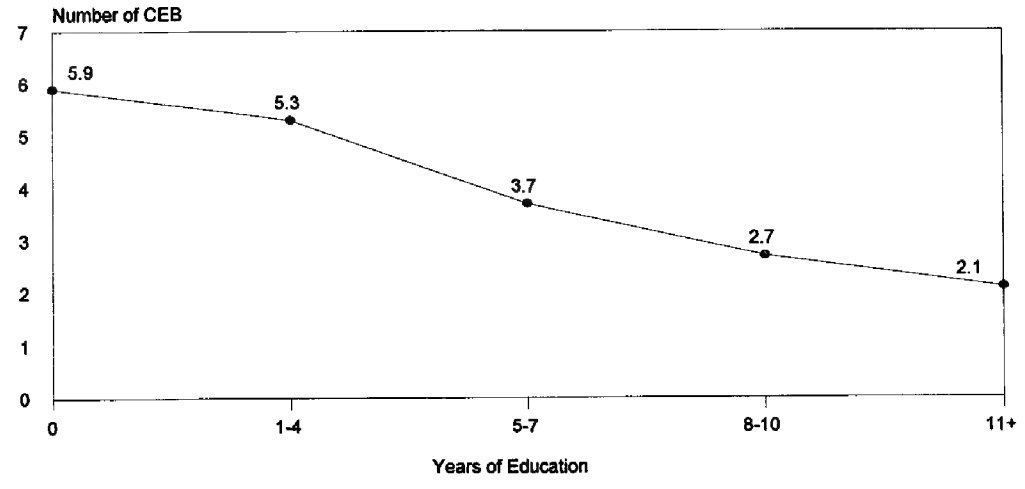
Background characteristics	Mean number of years	Number of women
Age		
15-19	4.6	332
20-24	5.1	1,040
25-29	5.1	1,211
30-34	4.8	1,283
35-39	4.0	1,073
40-44	3.4	901
45-49	3.1	679
Region		
West	5.3	2,325
South	4.3	998
Central	4.6	1,520
North	4.0	612
East	2.5	1,064
Residence		
Urban	5.1	4,181
Rural	3.1	2,338
Total	4.4	6,519

level of educational attainment (Figure 4.2). When the highest and lowest categories of education are considered, it is observed that women with 11 or more years of education have completed their fertility with almost four children less (2.1) than that of women with no education (5.9). The difference between the completed fertility levels of women with no education and those with 1-4 years of education (5.3) is not very pronounced. A decline of 1.6 children is observed in the group with 5-7 years of education when compared with the group with 1-4 years of education. The decline in the mean numbers of children ever born continues with increasing years of education. Women with 5-7 years of education have completed their fertil-ity with 3.7 children, whereas women with 8-10 years of education have completed their fertility with one child less (2.7).

4.2 Current Work Status

One of the widely accepted indicators of women's status is their involvement in the economic sector (Safilios-Rothschild, 1990). Employment has "transformational effects" on women, such as providing direct access and control over financial resources, enabling to function in the nondomestic sphere and in this way having access to the world outside the home, and having autonomy and control inside the home

Figure 4.2
Mean Number of Children
Ever Born (CEB) by Years of Education for
Women Age 40-49, 1993



(Kishor, 1995). The 1993 TDHS provides information mainly on women's current work situation, but there is also a question which investigates the premarital employment of women. In this study, both points of information have been utilized taking into account that not only the current work status is assumed to have an impact on the fertility of women, but also that the premarital work experience of women may have some impact on their fertility behaviour, such as age at first marriage and exposure to the outside world.

Table 4.2 presents the work pattern of women by combining past and current work history. However, this is not a full work history since the questionnaire is designed to obtain only current employment at the time of the survey, as opposed to lifetime work history. Therefore, the data is presented according to whether the woman has worked before marriage or not, by the woman's current work status.

Table 4.2 Percent distribution of ever-married women by work status before marriage and currently, according to education, Turkey 1993

Education (years completed)	Did not work before marriage: Currently not working	Did not work before marriage: Currently working	Did work marriage: Currently not working	Did work marriage: Currently working	Total	Number of women
0	60.6	11.0	7.5	20.9	100.0	1779
1-4	52.9	13.5	8.9	24.6	100.0	417
5-7	56.9	12.2	11.2	19.6	100.0	3342
8-10	56.2	12.8	19.7	11.4	100.0	319
11+	36.2	12.0	18.6	33.2	100.0	661
Total	55.5	12.0	11.2	21.3	100.0	6519

According to this distribution, more than half of ever-married women are currently not working and did not work before they got married. Only one-fifth of women have both premarital and current work history. Among women with the highest level of education, the proportion of women who did not work before marriage and who are not working at the time of the survey is 36 percent; however, this proportion rises to above 50 percent in the less educated groups. It is interesting that one-fifth of women with higher levels of education (8-10 and 11+) have premarital work experience but are not currently working.

In dealing with current work status, women have been divided into three categories: not currently working, currently working with social security, and currently working without social security. The social security criteria has been utilized to guarantee more accurate information on paid work, since a proper job necessitates the payment of social security. Moreover, having social security makes an individual less vulnerable both socially and economically, which in a way affects the woman's position.

Table 4.3 shows that 66 percent of ever-married women were not working at the time of the survey. It is also observed that only 7 percent of women work and have social security at the same time. The remaining 27 percent of women work without social security indicating the type of job for which social security is not paid. This group involves people such as dressmakers and sewers working at home and maids, as well as unpaid family workers.

Not much variation is observed according to age, but working women tend to be concentrated in the older age groups. More than two-thirds of women in the younger age groups do not work, and those working with social security are very small in proportion.

With regard to the marital status of women, married women usually do not participate in the work sector. Generally, widowed and divorced/separated women are more inclined to work. From one point of view, the major reason for working may be the financial anxiety of these women; from another point of view, it may be the social and economic guarantee of women working with social security which enables them to make the decision for divorce more readily. As seen in Table 4.3, more than one-fifth of divorced/separated women work with social security, and for widowed women, the percentage working with social security is 11 which is half the percentage for divorced/separated women. The proportion of married women working with social security is only one-third of that for divorced/separated women who work with social security.

Table 4.3 Percent distribution of ever-married women by current work and social security status, according to selected background characteristics, Turkey 1993

Background characteristics	Current work status			Total	Number of women
	Not working	Working without social security	Working with social security		
Age					
15-19	77.2	22.2	0.6	100.0	332
20-24	75.1	22.0	3.0	100.0	1039
25-29	67.7	26.7	5.6	100.0	1210
30-34	62.2	27.9	9.9	100.0	1283
35-39	60.9	28.4	10.6	100.0	1070
40-44	62.0	30.0	8.1	100.0	899
45-49	63.6	30.4	6.0	100.0	676
Marital status					
Married	66.6	26.7	6.7	100.0	6261
Widowed	52.8	36.4	10.8	100.0	148
Divorced/separated	44.0	34.0	22.0	100.0	100
Education (years completed)					
0	66.9	31.1	2.0	100.0	1773
1-4	61.3	36.5	2.2	100.0	417
5-7	67.6	29.7	2.7	100.0	3341
8-10	75.1	12.0	12.9	100.0	319
11+	53.2	4.6	42.2	100.0	660
Region					
West	66.7	23.4	9.9	100.0	2324
South	69.6	24.7	5.8	100.0	998
Central	61.8	31.8	6.4	100.0	1517
North	43.8	49.4	6.8	100.0	612
East	79.6	17.8	2.5	100.0	1060
Residence					
Urban	78.1	12.4	9.4	100.0	4176
Rural	44.2	53.3	2.5	100.0	2334
Has child under 5					
No	62.4	28.7	8.9	100.0	3506
Yes	70.1	25.1	4.8	100.0	3004
Total	65.9	27.1	7.0	100.0	6510

As expected, there is a pronounced difference in the work status of women according to their level of educational attainment. However, the rise in the percentage of women working with social security becomes apparent after 8 years of education. In particular, almost half of women with 11 or more years of education work in jobs with social security (42 percent). On the other hand, it is striking that half of women with the highest level of education do not work.

With respect to regional variation, the West Region has the highest percentage of women who work with social security, whereas the East Region has the lowest. The North Region has a lower percentage of women who are not working compared to the other regions. In the North Region, more than half of the women are working, yet a rather small proportion of women have social security with their jobs.

There is a substantial residential difference in the work status of women. A majority of urban women do not work. In the rural area, the proportion of working women is much higher than for the urban area; however, half of rural women work without social security.

As presented in Table 4.3, very few women with children less than age five work at jobs that provide social security, and one-quarter of all women work without any social security.

Child care is a significant obstacle in women's participation in the labour force. As illustrated in Table 4.4, overall the main source of child care is either from the mother or other relatives. The proportion of institutional care is very small and is mostly utilized by women working with social security. The table also reflects the intrafamily solidarity in child rearing as relatives constitute a substantial proportion in taking care of children.

Table 4.4 Percent distribution of child caretaker used for currently working mothers by social security status, Turkey 1993

Child caretaker	Working without social security	Working with social security	Total
Respondent	45.8	6.9	38.5
Husband/partner	0.5	2.1	0.8
Older children	11.5	3.4	10.0
Other relatives	40.0	48.1	41.5
Neighbors/friends	2.0	4.6	2.5
Servants/hired persons	-	18.9	3.5
Institutional care	0.1	16.0	3.1
Total	100.0	100.0	100.0
Number of women	628	144	772

4.3 Marriage Arrangements

As a norm of the society, women in Turkey are expected to get married no later than their late twenties and ultimately, almost all women marry. The universality of marriage in Turkey has been revealed by the TDHS results once more. According to the survey, among women ages 30-34, 96 percent have already been married, and furthermore, by the end of their reproductive years, those who have never married constitute only 1 percent of women (Ergöçmen, 1994). Another indication of the importance of marriage in Turkey is the percentage of time spent in the marital union. For instance, in the five years preceding the survey, women ages 35-39 were married for 94 percent of the months in that period. Since divorce is less common, marital dissolution occurs mostly through widowhood.

In recognition of the importance of marriage from the aspect of women's status and fertility, this study examines a number of specifications of marriage which are confined to the last husband. Nevertheless, since remarriage is not very common in Turkey, 97 percent of the last marriage for ever-married women refers to their first marriage.

One of the specific features of marriage in Turkey is the type of marital union. According to the Civil Code of Turkey, civil marriage is the only type of legitimate marital union. The Civil Code explicitly prohibits the practice of religious-only unions, but allows a religious marriage provided that a civil marriage is fulfilled at first. Despite the fact that it is forbidden by law, religious-only unions are commonly practised throughout the country. In particular, these unions are more common among rural areas and among less educated women. According to the TDHS results, 8 percent of ever-married women are in religious-only unions and 3 percent are in civil-only unions. The common pattern for marital unions in Turkey is to have a civil marriage with an additional religious ceremony (89 percent) (Figure 4.3).

Since religious-only marriages are not recognized by law and are considered to be illegitimate, women in religious-only unions are in a disadvantaged position since they do not benefit from the same legal rights as women in civil marriages. On the other hand, being in a religious-only union, even by definition, is a conservative way of behaviour where the rules of religion are predominant in the social lifestyle. Thus, women in religious-only marital unions assume a low status both in their marital and social lives.

Figure 4.3
Marriage Specifications
for Ever-married Women in Turkey, 1993

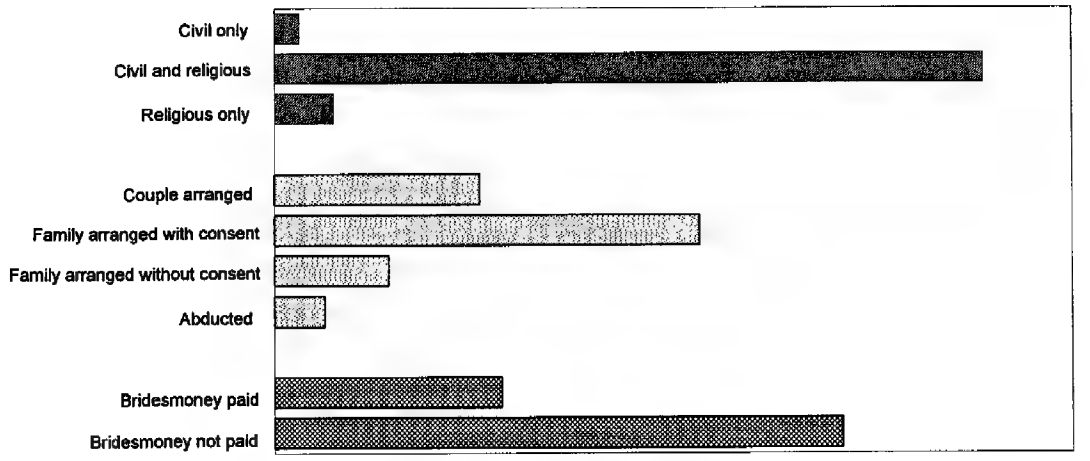


Table 4.5 shows that religious-only unions are inversely related to women's level of education. The mean years of education for women with religious-only marriages is no more than two years, and 16 percent of women with such marriages have never been to school. With the rise in the level of education, the proportion of women in religious-only marriages becomes smaller.

Choice of spouse, which signifies a woman's independent decision making, is another specification of marriage in relation to the status of women. One-fourth of marriages of ever-married women are arranged by the couples themselves. However, arrangement of marriage by the family, with or without the consent of the woman, is very common in Turkey. Although the consent of the woman is obtained in most of these family-arranged marriages (54 percent), a marriage arranged by the family is an indication of conservative

behaviour which grants little or no initiative to the woman. This lack of initiative at the very beginning of her marital life sets a precedent of low status for the woman in her subsequent family life.

Another feature of the marriage arrangement in Turkey is the abduction of the woman by the man. There are different reasons for this traditional type of behaviour. Couples sometimes resort to this type of arrangement when they do not receive the consent of the family. Sometimes, the use of force is involved when the woman seems reluctant to marry. Other times, it is practised in order to avoid payment of the bride-price, and finally, it is sometimes regarded as a cultural necessity by the society. In some cases, the woman has full involvement in the event, but in others, it is a coercive way of behaviour in which the woman is regarded as a commodity rather than a human being. There is no detailed information in the survey data that can discriminate between the types of involvement of the woman. Therefore, abduction has not been considered as a category in the marriage arrangement variable.

As illustrated in Table 4.5, women's level of education affects the likelihood that she will have more initiative in making her decision in the choice for a marriage partner. Arrangement of marriage by the family appears to decrease as level of education increases, whereas arrangement of marriage by the couple seems to rise with increasing educational level. In other words, the more educated the woman is, the less likely she will enter a family-arranged marital union.

Table 4.5 Percent distribution of ever-married women by marriage-related specifications according to years of education, Turkey 1993

Marital specifications	Years of education					Mean
	0	1-4	5-7	8-10	11+	
Marital Status						
Currently married	95.6	96.3	96.6	96.2	95.6	4.4
Widowed	3.4	2.4	2.0	1.1	1.3	3.3
Divorced/separated	0.9	1.3	1.5	2.7	3.2	6.0
Type of Marriage						
Civil-only	1.9	3.3	2.7	2.5	10.0	6.7
Civil and religious	82.1	90.3	92.2	94.9	89.7	4.5
Religious-only	16.0	6.4	5.1	2.6	0.4	2.1
Marital Arrangement						
Decision of couple	13.4	13.8	24.5	50.5	62.8	6.4
Decision of family with woman's consent	53.2	59.8	58.6	37.2	34.1	4.0
Decision of family without woman's consent	26.8	19.7	10.5	3.8	0.8	2.3
Bridesmoney						
Paid	54.7	43.4	20.5	5.8	2.4	2.3
Not paid	45.3	56.6	79.5	94.2	97.6	5.3
Total	100.0	100.0	100.0	100.0	100.0	
Number of women	1779	417	3342	319	661	6519

Payment of bridesmoney is another common traditional practice in Turkey. A certain amount of brides-money, either in cash or in kind, is paid to the family of the bride. The bride-price is a symbol of chastity and an economic compensation in exchange for the loss of labour of the daughter. Apparently, payment of bridesmoney is the reflection of a patriarchal society which regards the woman as a commodity that can be purchased, and in this way ascribes her an inferior status.

Results of the TDHS show that bridesmoney has been paid in 29 percent of marriages. Despite the fact that payment of bridesmoney is inversely related with the woman's level of education, there is still 2 percent of women with 11 or more years of education for whom bridesmoney was paid.

4.4 Decision Making and Women's Views on Gender Attributes

Women's decision-making power in the family is assumed to be reflective of her position in the household. In patriarchal societies, it is usually the male who decides on important family matters. The likelihood of making joint decisions is associated with indicators of women's status such as higher education, working for wage, living in urban areas, etc. (Nawar et al., 1995). The ability to decide independently and/or make joint decisions, which necessitates negotiation, are important dimensions in shaping the status of women. To measure the decision-making power of women, the question on "who decides in the family to take the sick child to a doctor" has been utilized. This question is assumed to reflect the woman's decision-making power on a very important issue where the health of her child is at stake.

According to a study by Kağıtçıbaşı (1982) in which the "value of children" was studied, the communication between husband and wife, and women's participation in the decision-making process is rather low in Turkey. The study has shown that, relative to other countries, Turkey emerges as the one where decision making by males is the highest. TDHS results have also shown the male dominance in decision making. Unfortunately, only one-fourth of women participate in the decision for taking the sick child to a doctor (Table 4.6). As expected, younger and older women are less powerful in participating in the decision. Highly educated women and women working for wage with social security are more empowered in participating in the decision for obtaining medical care for the child. However, even among women with 11 or more years of education, the proportion of women who participate in the decision is only 58 percent. Due to the fact that having social security provides health security for their dependents, women working with social security appear to have more say and they act more independently. Women living in the East Region and in rural areas have a minimal role in decision making. A majority of mothers in these places do not have any say on the health of their children, which may ultimately affect the life of the child.

Women's perceptions about gender attributes are important in establishing egalitarian relationships in the household. The three following statements have been selected to measure how women perceive men, which is also an indicator of how women view themselves: *"Men are usually wiser than women," "A man can beat up his wife in case of inobedience,"* and *"A woman should not argue with her husband if she does not share the same views with him."*

The results presented in Table 4.6 imply that in general half of ever-married women regard themselves as inferior to males. These women believe that men are wiser than women, that a woman should not argue with her husband if she has a different view from his, and that the husband has the right to beat up his wife if she does not "obey."

Not much variation is observed across the age of women in perceiving gender attributes. Naturally, women in older ages are found to be more inclined to agree with the statements. However, the results are not what would be the expected for younger women who are assumed to have relatively more modern views and are more sensitive to their status.

Table 4.6 Percent distribution of ever-married women by participation in decision making and perception about gender attributes, according to background characteristics, Turkey 1993

Background characteristics	Participate in decision		Number of women	Men wiser		Women should not argue		Men can beat wife		Number of women
	Yes	No		Agree	Disagree	Agree	Disagree	Agree	Disagree	
Age										
15-19	13.9	86.1	143	43.0	57.0	49.6	50.4	48.3	51.7	332
20-24	20.6	79.4	810	42.8	57.2	50.0	50.0	46.7	53.1	1039
25-29	27.9	72.1	912	42.4	57.6	46.3	53.7	47.0	53.0	1211
30-34	29.8	70.2	628	43.9	56.1	46.3	53.7	47.1	52.9	1283
35-39	28.6	71.4	282	44.6	55.4	52.4	47.6	51.3	48.7	1073
40-44	18.3	81.7	115	52.8	47.2	56.0	44.0	55.5	44.5	901
45-49	*	*	24	54.4	45.6	57.8	42.2	58.4	41.6	677
Education										
0	10.7	89.3	765	63.3	36.7	67.2	32.8	73.2	26.8	1779
1-4	27.4	72.6	145	65.0	35.0	65.8	34.2	69.1	30.9	417
5-7	23.3	76.7	1534	44.9	55.1	50.5	49.5	47.9	52.1	3340
8-10	48.7	51.3	151	14.0	86.0	22.6	77.4	11.3	88.7	319
11+	58.0	42.0	319	6.9	93.1	10.0	90.0	6.0	94.0	661
Work status										
Not working	25.7	74.3	2092	43.3	56.7	48.3	51.7	46.0	54.0	4291
Working without social security	15.3	84.7	674	59.4	40.6	64.2	35.8	68.5	31.5	1762
Working with social security	66.3	33.7	143	16.7	83.3	18.4	81.6	17.5	82.5	455
Region										
West	39.4	60.6	879	38.0	62.0	44.7	55.3	39.8	60.2	2324
South	27.6	72.4	476	42.8	57.2	47.5	52.5	51.4	48.6	998
Central	20.6	79.4	652	51.8	48.2	54.2	45.8	57.5	42.5	1520
North	23.6	76.4	274	52.8	47.2	59.2	40.8	56.8	43.2	612
East	9.6	90.4	634	53.2	46.8	56.2	43.8	57.3	42.7	1064
Residence										
Urban	34.1	65.9	1839	36.5	63.5	42.8	57.2	38.2	61.8	4179
Rural	10.2	89.8	1075	62.6	37.4	64.6	35.4	71.4	28.6	2338
Total	25.3	74.7	2914	45.8	54.2	50.6	49.4	50.1	49.9	6518

Note: An asterisk indicates that a figure is based on fewer than 25 cases and has been suppressed.

Striking differences in women's views are observed with rise in educational attainment, especially after having at least eight years of schooling. Low levels of education are not found to contribute greatly to establishing contemporary views on gender issues. It is surprising that a rather substantial amount of women with 11 or more years of education still agree that a husband can beat up his wife or that men are wiser than women.

With regard to work status, views of women working with social security differ from others in the sense that more than 80 percent of these women disagree with the statements. This is expected since women working with social security are usually the women who have better education and better qualifications. On the other hand, it is noteworthy that compared to women who do not work, more women who work in jobs without social security agree with the statements.

On a regional basis, except for the West and South Regions, more than half of the women in the remaining regions agree with the statements meaning they accept the dominance of men and consider themselves as subordinate to them. With respect to place of residence, the percentage of women who disagree with the statements is lower among women in urban areas than those in rural areas.

5 A MULTIVARIATE APPROACH TO WOMEN'S STATUS AND FERTILITY

The relationship between women's status and fertility has been analysed by using ordinary least squares multiple regression analysis. Five separate models are constructed with different sets of variables. One model has been constructed with only demographic variables, while the other models are built by the introduction of sets of variables one after the other—one with the introduction of background variables, one with the introduction of socio-economic variables, one with the introduction of status variables, and finally, one with a complete model in which all variables are considered.

5.1 Description of Variables

The dependent variable for the multivariate analysis is the number of children ever born which represents cumulative fertility. The independent variables are grouped as demographic, background, status, and socio-economic variables.

Demographic variables: The dependent variable, by nature, shows variation across the dimension of various demographic variables. In the first place, years since first marriage has been taken as one of the demographic variables. It is the gross years since first marriage for which the mean was estimated at 13.5 years (Table 5.1). Dummy variables have been defined for four birth cohorts, namely cohorts 40, 50, 60, and 70. Cohort 60 has been used as the reference category. Dummy viarables have also been made for being currently married and for having no dead children.

Table 5.1 Selected indicators for women, Turkey 1993

Indicator	Value
Age (median)	32.5
Interspousal age difference[1] (mean number of years)	4.4
Education (mean years completed)	4.4
Husband's education (mean years completed)	6.4
Interspousal educational difference (mean number of years)	2.0
Marriage type (percentage with civil marriage)	92.2
Marriage arrangement (percentage having primary control)	5.9
Age at first marriage (women ages 30-34) (mean)	19.0
Marital duration (gross) (mean number of years)	13.5
Age at first birth (women ages 30-34) (mean)	20.1
Completed fertility[2] (CEB for women ages 45-49)	5.0
Living children[2] (mean number for women ages 45-49)	4.1

[1] Interspousal age difference equals the husband's age minus the wife's age.
[2] This variable applies to currently married women.

Background variables: Dummy variables have been defined for the five regions of the country—West, South, Central, North and East. Among regions, the West Region is considered the reference region. For urban-rural residence, rural has been taken as the reference category.

Socio-economic variables: Since the TDHS did not collect income data, socio-economic status has been measured by an index (referred to as "asset") based on the

durable consumer goods[1] owned by the household. The index has been calculated by assigning a value between 1 and 4 for the possession of each item (some items are assigned higher values than others). The index ranges between 0 and 28 for the included 11 items. In addition to the asset index, another dummy has been constructed by using household's source of water and toilet facility in which the presence of piped water together with the flush toilet is considered to be indicative of good sanitation.

Status variables: Dummy variables have been established for education with five categories on the basis of years of schooling: no education, 1-4 years, 5-7 years, 8-10 years, and 11 or more years of education. Educational difference between husband and wife has been taken as a separate variable for the status of women, for which the mean difference has been calculated as 2 years (Table 5.1). Dummies are constructed for the variables of work with social security and work without social security. Variables that consider the participation (marriage arranged by the couple) and consent (family seeks consent) of women in the marriage arrangement have been built as separate variables. Age at first marriage and age difference between the spouses are two other variables for the status of women. In light of the findings of the previous section, opinion variables for gender attributes have been defined as two separate variables—one variable for disagreement with all three statements, and one for disagreement with either one or two statements.

Variables that consider only a limited number of women, such as "decision making for taking the sick child to a doctor," which involve only women with children under age five, and "work before marriage," which decreases the total number of respondents due to missing cases, have been omitted from the model.

5.2 Results

The results of the regression analysis are presented in Table 5.2 under five models. Variable sets are considered in separate models in order to be able to differentiate the effect of explanatory variables for women's status independent of the influence of other related predictors. Model 1 involves selected demographic variables thought to be influential on the number of children ever born. These variables indicate control over children ever born showing variation on the dimension of these variables. The findings indicate significant contribution from all demographic variables. However, the strength of their predictive value falls when other variable sets are introduced into the model. The only exception to this is the birth cohort of 70 for which the predictive value increases even after controlling for other variable sets. Actually, on the basis of birth cohorts of women, there are marked differences. Not having a dead child has a negative relationship with cumulative fertility. Marital duration and being in a marital union have a positive relationship with children ever born. Overall, demographic variables explain 58 percent of the variation in the number of children ever born.

With the introduction of background variables in Model 2, R^2 changes by only 5 percent, and the inclusion of socio-economic status variables (Model 3) makes a rather small increase in R^2 by an additional 1.2 percent. In Models 2 and 3, except for urban residence, the remaining variables show significant contributions. Looking at the other models for urban residence, it can be predicted that place of residence is not an important contributor to cumulative fertility. This may partly be explained with the high rates of rural to urban migration where rural characteristics are carried to urban areas.

[1] The durable goods included are telephone, radio, television, video recorder, music set, oven, vacuum cleaner, washing machine, dishwasher, refrigerator, and car.

Table 5.2 Regression coefficients for selected characteristics of ever-married women on children ever born, Turkey 1993

	Model 1	Model 2	Model 3	Model 4	Model 5
Demographic variables					
Marital duration	.167*	.157*	.155*	.116*	.128*
Currently married	.845*	.715*	.784*	.723*	.687*
No dead children	-2.171*	-1.959*	-1.867*	-1.905*	1.785*
Cohort 40	-1.272*	-1.004*	-.905*	-.664*	-.652*
Cohort 50	-.414*	-.256*	-.194**	(-.064)	(-.046)
Cohort 70	-.159***	-.359*	-.439*	-.536*	-.595*
Background variables					
Urban		-.381*	(-.046)		-.100
South		.575*	.502*		.433*
Central		.369*	.332*		.324*
North		.373*	.364*		.331*
East		1.422*	1.271*		1.039*
Socio-economic variables					
Asset			-.042*		-.023*
Sanitary condition			-.208*		-.186**
Status variables					
No education				1.378*	.806*
Education 1-4 years				.850*	.472*
Education 5-7 years				.193***	(.021)
Education 8-10 years				(-.021)	(-.013)
Interspousal educational difference				-.047*	-.037*
Work with social security				-.315*	-.260**
Work without social security				(-.050)	-.167**
Marriage arranged by couple				-.249*	-.174**
Family seek consent				-.195*	-.123**
Age at marriage				-.034*	-.021***
Interspousal age difference				(-.007)	(.001)
Disagree with 3				(-.040)	(.043)
Disagree with 1 or 2				(.024)	(-.042)
Constant	1.943	1.802	2.120	2.85	2.710
R^2	.577	.626	.638	.625	.653

* ($p < 0.001$) ; ** ($p < 0.01$); *** ($p < 0.05$)
Note: Figures in parentheses are estimated to be insignificant.

Women in the East Region are substantially different from other regions in terms of their cumulative fertility. In particular, living in the East Region contributes more to cumulative fertility than living in the West Region. Socio-economic indicators are also significant predictors of cumulative fertility. However, their predictive value falls when they are controlled for the status variables (Model 5). Women living in houses with good sanitary conditions, specifically, houses with flush toilet and piped water, tend to have less number of children than women living in poor sanitary conditions.

When examining the strength of linear association between the dependent and independent variables, Model 4 gives a rather high value by explaining 63 percent of the variation in cumulative fertility. The first two categories of education appear to be important contributors to cumulative fertility (Model 4). To have low levels of education, and in particular, not to have any education has a significant positive relationship with the number of children ever born. However, higher levels of education which are associated with

reduced fertility, appear to be insignificant. Still, looking at Model 4, the difference in fertility appears to start after five years of education, namely after primary school.

The difference in years of education between spouses is inversely related with children ever born, but its contributive effect is rather low. As seen in Table 5.1, the mean interspousal educational difference is only two years. Work with social security is negatively associated with cumulative fertility. Working without social security also has a negative predictive value but a rather weak one. Marriage arrangement indicators are also significant predictors even after controlling for other model factors. Woman's age at first marriage is found to have a low negative predictive value. Age difference between spouses and women's views on gender attributes as well as higher levels of education are not significant. Although the variables that indicate women's opinion on gender attributes show substantial bivariate associations with fertility indicators, after controlling for the other factors, their predictive values become less. Finally, when the influence of all the predictor values is considered in Model 5, variance in the cumulative fertility is 65 percent.

In general, the regression analysis shows that most of the variables under consideration have statistically significant effects on cumulative fertility, except for interspousal age difference, opinion of women on gender attributes, and higher levels of educational attainment. The analysis confirms that women's status variables influence fertility. Education above five years of schooling, working with social security, and participating in the marriage arrangement are all key factors in reducing fertility. It is also important to note that the size of the coefficients of the status variables is considerably reduced after applying controls, indicating that there is a relevant mediation effect of the demographic, background, and socio-economic factors considered.

6 CONCLUSION AND DISCUSSION

The deep-rooted historical and cultural values of the country have prepared the framework for the status of women in Turkey. In accordance with the patriarchal structure of the society, males play dominant roles in both the family and society. The findings of this study also imply a subordinate position for women in Turkey. Firstly, practices related to marital life such as prevailing marriage patterns, namely existence of religious-only marriages where women do not have any legal and institutional rights; the payment of bridesmoney which treats women as a commodity; and the prevalence of family-arranged marriages involving less individual control over the selection of a husband help to generate the low position of women. Secondly, the way women perceive themselves as inferior, such as being less wiser than men, stimulates the dominance of husbands over wives. Finally and most notably, it is women's low level of education coupled with their low level of wage earning employment which put them in a comparatively lower status.

Education is very important as an indicator of women's status because it has a pervasive impact on fertility, while it also interacts with other socio-economic, cultural and demographic factors. In Turkey, women's educational level on the average is generally low. Overall, the mean years of education is even lower than the compulsory years of education. There is remarkable variation in the level of education across the dimensions of age, region, and residence. The results of the study reveal that less education is associated with higher fertility. Besides education, women's participation in the formal work sector is very low which is greatly related to women's low level of education. Gainful employment reduces women's dependence on other family members, and provides social security which, on one hand, equips her with a more sound position in family life and, on the other hand, refrains her from viewing marriage and children as her social security. Decision making in the family, views on gender attributes as well as fertility have showed variation across education and work status of women.

According to the results of this analysis, not all indicators of women's status are significant determinants of fertility. However, having education above five years, having a job with social security, having initiative in the marriage arrangement, and increased age at marriage are found to be the factors that reduce fertility.

The coexistence of modern and traditional attitudes and behaviour is the prevalent pattern in the social and cultural life of Turkey. The findings of this analysis support the heterogeneity of Turkish social and cultural life with reference to women's status and fertility. There are substantial differences in the indicators of women's status between regions, most notably the West and East Regions. The West Region is the most socio-economically developed representing a relative modernity, while the East Region is the least developed representing the least modern. Also, there exists notable differentiation between urban and rural settlements.

The major policy implication of this study has been the importance of female education and employment to improve women's status which will ultimately have an impact on fertility behaviour. The results of the analysis confirm the importance of education and economic power in elevating women's status. However, programs inclined to raise the status of women should recognise the fact that there still exists important differentials in social, economic and cultural backgrounds of different regions and settlements in the country.

Finally, an analysis of women's status from a standardized large-scale demographic survey is expected to have some shortcomings, since the structure of this type of survey is considered to be irrelevant for measuring the multidimensional nature of women's status. However, these additional questions of the TDHS have been useful in examining the mechanisms through which women's status influences fertility. Thus, it can be concluded that incorporating relevant new questions in between the existing standard questions of the survey, and having a supplementary sub-module covering various aspects of women's status can bring valuable insight to the understanding of demographic phenomena.

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REPRODUCTIVE EXPECTATIONS AND FERTILITY TRENDS IN TURKEY

Turgay Ünalan

1 INTRODUCTION

The subject of fertility preferences has been included in fertility and family planning surveys since their beginning. In most demographic surveys, women are asked to state their desired family size and whether they desire to have more children. The main objective of collecting such information is to determine the demand for fertility regulation and to estimate the demographic implications of the underlying preferences.

The measurement of desired fertility has evolved over time and is still subject to continuing methodological evaluation. There is still no agreement on the most appropriate way to measure desired fertility. The main problem is the often large differences between various existing summary indicators of preferred fertility. The reasons for these differences are not always clear, and as a consequence, researchers who want to use preference indicators have insufficient guidance as to which of the wide variety of available indicators best suits their purposes (Bongaarts, 1990). The purpose of this study is to assemble a significant part of the accumulated knowledge about reproductive preferences and investigate their usefulness for the analysis of fertility trends in Turkey.

1.1 Measures of Fertility Preferences

The measures that are used to reflect the fertility preferences of individuals can be broadly divided into two groups: those indicating the *reproductive norms,* and those indicating the *reproductive expectations*.

Desired family size, or the desired number of children a woman wants to have, is the best known and most widely available preference indicator. The desired family size indicator provides a measure of the level of completed fertility desired by women or couples under the idealized circumstances in which they are able to perfectly control their fertility and have exactly the number of children they desire. However, family size preferences of women are not purely personal choices. The desired number of children reflects the reproductive norms of a society. Women are often conditioned by the predominant values of society and they reflect deep-seated social and cultural attitudes and expectations that are usually beyond their control.

Average desired family size has declined dramatically in many parts of the developing world. Reasons for the decline include economic development, changes in values regarding children and in women's roles and aspirations, and improved access to modern methods of contraception. However, in many countries, there is still a gap between women's desired and actual family size.

The validity of desired family size as a predictor of fertility has been criticized on the grounds that it contains a strong element of idealization and is influenced by the mothers' rationalizations of their existing children. In some parts of the world, quite large proportions of women believe that the number of children they have is up to God. Also, couples do not always agree among themselves about the number of children they want.

Several longitudinal studies in the United States have confirmed that the mean number of children desired by young women can predict the mean number of lifetime births with an accuracy ranging from 90 to 100 percent (Westoff, 1981a). However, aggregate-level agreement between desires and actual fertility in those studies was largely by chance, as a result of women counterbalancing over- and underestimates of their future fertility. Many studies in the United States have revealed that there have been substantial changes over time in the fertility goals of a given cohort, as well as between cohorts (Lee, 1981).

Another widely known indicator of reproductive norms is ideal family size. While desired family size reflects the preference of the respondent for her family, ideal family size reflects what the respondent considers to be the ideal size of a family or thinks is the best number of children to have. Although the terms desired family size and ideal family size are sometimes used interchangeably, a distinction could be made by defining ideal family size as respondent's ideal number of children for a family in a society, while desired family size reflects the preference of the respondent for the number of children in her family. Asking ideal family size can be used for measuring societal norms, whereas desired family size can be used for measuring desired fertility performance of women. As a collective image that reflects the accepted norm, ideal family size is much less reliable as a predictive device.

Responses to questions about whether women want to have any more children are generally considered to be relatively unbiased and have the potential to anticipate future fertility. This indicator is widely used in surveys to identify women (or couples) with a demand for additional children, on the one hand, and those who do not desire additional children and thus have an apparent need/demand for fertility limitation on the other.

Information on women's desire for more children has played a critical role in demonstrating that in many developing countries there are massive numbers of women who do not want additional children, and also in estimating the extent of potential need for contraception. However, data on desire to postpone or stop childbearing are of little policy significance unless it can be documented that women who want to postpone or stop childbearing are in fact implementing this preference through an increase in contraception and a reduction in fertility.

Recent methodological research has raised confidence in the predictive validity of reproductive expectations. An examination of data from 134 surveys in 84 countries, Westoff (1990) revealed that the total fertility rate[1] (TFR) and the percentage of women who want no more children are strongly and inversely associated, both in general and among developing countries. The conclusion reached was that the proportion of women reporting that they want no more children has high predictive validity and is, therefore, a useful tool for short-term fertility forecasting. Similarly, in the 18 Demographic and Health Survey (DHS) countries Bongaarts (1991) studied, a significant but highly variable impact of the desire to stop childbearing on reproductive behaviour was evident.

Given strong empirical evidence linking this measure to fertility levels, indicators of reproductive expectations may provide valuable information on the future fertility trends and the level of future demand for family planning services. This indicator is currently viewed as being relatively unbiased, as there are no obvious reasons for respondents to over- or underreport preferences to continue childbearing. However, this does not mean that this preference measure is completely free of error (Bongaarts, 1990).

Responses to the number of births expected during one's lifetime can be used to project the completed cohort fertility of cohorts now of childbearing age. As the sum of the number of surviving children the respondent has and the number she expects to have in the future, the derived total closely approximates, depending on the effective and widespread use of modern contraceptive methods, the ultimate

[1] The total fertility rate is calculated from the age-specific fertility rates which are the number of births to women in each five-year age group during the period for which the rate is being calculated divided by the number of women in the age group. The TFR is the sum of all the five-year age-specific fertility rates, multiplied by 5 (because women spend 5 years in each age group) (Robey et al., 1992). The TFR is a synthetic measure because it does not reflect the actual fertility of any group of women. Instead, it combines into one statistic the current fertility behaviour of women in all the reproductive age groups. It can be interpreted as the number of children a woman would have during her lifetime if she were to experience the fertility rates of the period at each age.

or complete family size. This method may give reasonably accurate results for women who are near the end of their reproductive years, but the results for younger women must be treated more cautiously. Although its validity as a predictor of future fertility trends has been widely discussed, there is no doubt that this tool is of capital importance for a better understanding of the direction of future fertility trends.

1.2 Estimation of Wanted Fertility Rates

Estimation of wanted fertility is of interest since it provides an indication of the extent to which fertility would be reduced if women were completely successful in implementing their preferences for stopping or delaying childbearing. There are basically three ways of estimating levels of wanted fertility. These methods rely on different fertility preference questions directed to women in order to split the TFR into its wanted and unwanted parts.

The *desired total fertility rate* (DTFR) is obtained by recalculating the total fertility rate from age-specific birth rates after subtracting from the number of actual births those prior births that exceed each woman's reported desired family size (Lightbourne, 1985b, 1987; Westoff, 1981b, 1991). This approach is also called the "deletion" method. A birth is considered wanted if the number of living children at the time of conception is less than the current desired number of children, as reported by the respondent. Since this measure is calculated depending on the answers given on desired family size, it suffers from the criticisms directed to the desired family size concept. In another paper, Lightbourne (1985a) also estimates desired TFRs using data from the World Fertility Survey (WFS) by excluding births in excess of desired family size as well as births that respondents said were unwanted (using information from desire for last birth among nonpregnant women).

Another way of estimating levels of wanted fertility is based on responses of women to the question as to whether each birth in the five years before the survey was planned (wanted then), mistimed (wanted, but at a later time), or unwanted (wanted no more children). According to this approach, births to women who had wanted no more children at all (the last category) is the basis for the unwanted birth classification (Westoff et al., 1989). Using answers to this question, the *reported wanted total fertility rate* (RWTFR) can be estimated by excluding in the calculation of the TFR all births that were conceived when the woman reported not wanting more children. These data are likely to result in underestimates of unplanned childbearing to the extent that women rationalise unplanned births and declare them as planned once they are born.

According to Bongaarts (1990), approaches estimating wanted fertility based on responses to survey questions on desired family size, wanted status of recent births, and desire to continue childbearing are typically upwardly biased in measuring wanted fertility. The latter of these three approaches, women's desire to continue childbearing, is the least biased of standard preference measures, and using this measure, Bongaarts proposes an indirect measure of estimating wanted fertility. The third approach by Bongaarts (1990) calculates the *wanted total fertility rate* (WTFR) by using answers to questions about desire for more children to classify births in a reference period as wanted or unwanted. First, the so-called "want-more" TFR (the TFR that results after deleting births to women who want no more) is calculated. Then, the wanted TFR is calculated by using a correction factor in order to estimate the part of the TFR that is attributable to last wanted births (the wanted births after which women wish no more children).

The terminology for "desired" and "wanted" stems from Bongaarts (1990) to distinguish the DTFR based on desired family size and the WTFR based on wanting an additional child (Pritchett, 1994). The second approach which is based on the wanted status of the last child is called RWTFR by Bongaarts (1990) to distinguish it from the other two approaches. In fact, Westoff et al. (1989) called their indicator the "wanted fertility rate." However, in order to differentiate between what Bongaarts (1990) defined with that

of Westoff et al. (1989), the measure developed by Westoff et al. (1989) is also referred to here as the RWTFR. In a later report using WFS and DHS data, however, Westoff (1991) uses the DTFR approach in order to compare and estimate trends in the desired total fertility rate in developing countries.

To summarise, the DTFR approach utilises the data on desired family size to calculate what the TFR would be if all unwanted births were avoided, while the RWTFR approach utilises data on planning status of last birth, and the last approach calculates the WTFR by using answers to questions about women's desire for more children.

1.3 Reproductive Expectations and Fertility Behaviour

Depending on the level and effective use of modern contraceptive methods, reproductive expectations of women, especially their desire for having more children or not, are expected to be reflected in their fertility performance. Women's ability to forecast their own future fertility has been improving in recent decades. Women can now better manipulate socio-demographic events that were previously beyond their personal control, such as contraceptive use, abortion, the choice of a marriage partner, work during marriage, or the right to divorce. Thus, in modern society there is an increasing move toward control of fertility (Placek and Hendershot, 1981). Demographic data indicate that dramatic trends in family planning have also emerged in developing countries (Robey et al., 1993). Increasing availability and accessibility of modern contraceptive methods are allowing couples to determine the occurrence and timing of births. The desire to limit fertility is becoming the most commonly used index of the potential market for birth control.

Using data collected from eight developing countries in the DHS, Westoff et al. (1989) concluded that increasing the general prevalence of contraceptive use has the greatest potential for reducing fertility, and reductions in fertility must result from declines in the numbers of children wanted. A recent study by Westoff and Bankole (1995) calculated several estimates of the fertility implications of the potential demand for family planning if different amounts of unmet need were satisfied. The most likely set of assumptions yielded an average of an 18 percent decline across all of the 27 DHS countries included in the report.

In a previous paper, Westoff (1990) found that differences in reproductive intentions explain 78 percent of the difference in TFRs in 68 developing countries. Similarly, Pritchett (1994), after examining published WFS and DHS survey data on desired fertility, concluded that it is fertility desires and not contraceptive access that matter; 90 percent of the differences across countries in total fertility rates are accounted for solely by differences in women's reported desired fertility. Pritchett (1994) further stated that because fertility is principally determined by the desire for children, contraceptive access or family planning efforts more generally are not a dominant, or typically even a major factor in determining fertility differences. Pritchett (1994) demonstrated that contraceptive use is higher where fertility is lower primarily because desired fertility is lower, which leads to both lower fertility and higher contraceptive demand, and hence higher contraceptive use.

1.4 Objectives

The main objective of this study is to estimate the potentials for fertility decline in Turkey using various measures of wanted fertility by breaking the total fertility rate into its wanted and unwanted components. More specifically, the study aims to answer the following questions:

1) Which fertility preference measure is more useful for the analysis of fertility in the context of Turkish society?

2) To what extent do unwanted or mistimed pregnancies occur?

3) What would the TFR have been if all unwanted and mistimed births were eliminated?

4) What are the prospects for further fertility declines in Turkey?

2 METHODOLOGY

Turkey has a powerful tradition of conducting nationwide demographic surveys. The history of nationwide demographic surveys dates back to 1963. In that year, the School of Public Health, Ministry of Health, conducted a demographic survey to obtain estimates of vital rates, previously unavailable through conventional sources like the registration system; and also to address demographic and other related problem areas of interest, such as contraceptive use, abortions, and childhood mortality. With the objective of providing useful demographic data during intercensal periods, the Hacettepe University Institute of Population Studies (HIPS) took the initiative of conducting nationwide demographic surveys every five years beginning in 1968. The Turkish Demographic and Health Survey (TDHS) is the latest in the series of quinquennial demographic surveys conducted by HIPS. Most of the findings presented in this report originate from the data collected in these surveys, especially the 1978, 1983, 1988, and 1993 surveys.

Most of the demographic surveys conducted in Turkey collected data on total number of children desired, whether more children were wanted, and whether the last birth was wanted, which permit us to construct a large number of reproductive preference measures. This section first presents the data sources, and then the preference variables used in the present study— namely, (1) desired family size, (2) whether more children are wanted, and (3) whether the last birth was wanted. In addition to these preference variables, this section examines the topic of unwanted fertility by introducing the idea of the planned total fertility rate. Also, with the aim of completing the fertility of different cohorts of women, expected family sizes of each woman are calculated based on the information on number of additional children desired.

SPSS 5.0 (for DOS) was used for statistical analyses. For the production of fertility rates a package named DHSPAK, developed by Macro International Inc. was used. It uses SPSS "include files" for calculating fertility measures such as age-specific fertility rates.

2.1 Data Sources

1993 Turkish Demographic and Health Survey (TDHS): The 1993 TDHS is a nationally representative survey of ever-married women less than 50 years old. The survey was designed to provide information on fertility levels and trends, infant and child mortality, family planning, and maternal and child health. The TDHS was conducted by HIPS under a subcontract through an agreement between the General Directorate of Mother and Child Health and Family Planning, Ministry of Health, and Macro International Inc. Interviews were carried out in 8,619 households with 6,519 women.

1988 Turkish Population and Health Survey (TPHS): The 1988 TPHS was conducted by HIPS. The sample of this cross-sectional survey was selected by a multistage stratified cluster sampling procedure. The TPHS covered 6,552 households and 5,257 ever-married women under age 50. A subsample of 2,264 husbands were also interviewed. In the TPHS, a household, a woman's, and a husband's questionnaire were used. The woman's questionnaire covered the following topics: respondent's background characteristics, fertility and fertility preferences, contraceptive knowledge and practice, and polygamous marriage. The husband's questionnaire consisted of five sections: respondent's background characteristics, marriage, fertility and fertility preferences, contraceptive knowledge and practice, and general attitudes and behaviour.

1983 Turkish Fertility and Health Survey (TFHS): The 1983 TFHS was carried out by HIPS. Interviews were completed in 6,545 households with 5,398 ever-married women under age 50. The TFHS was carried out with a nationally representative probability sample of households. The sample design was a stratified multistage element sample. A household and an individual questionnaire were used. The individual questionnaire had eight sections: respondent's background, fertility, fertility regulation, availability of contraceptive methods, basic health information, marital history, work history, and husband's background.

1978 Turkish Fertility Survey (TFS): The 1978 TFS was conducted under the auspices of the World Fertility Survey (WFS) by HIPS. It was a cross-sectional survey with a nationally representative equal probability (self-weighting) sample of households. Interviews were conducted with 5,142 households and 4,431 ever-married women younger than 50 years of age. A household and an individual questionnaire were used. The individual questionnaire consisted of seven sections: respondent's background, birth history, marriage history, contraceptive knowledge and use, fertility regulation, work history, and husband's background.

Primarily 1993 TDHS data are used in this analysis. However, whenever possible, comparisons with previous survey findings and trend analyses are presented. The rectangular data files from the 1993 TDHS standard recode data are used in the analysis. Data for the other surveys are largely similar to the DHS type of recoded data in terms of variable construction and value labels.

2.2 Measures of Reproductive Norms and Expectations

2.2.1 Desired Family Size

The questions on desired family size were very similar in all four surveys with minor modifications and present comparable figures over time. The percentage of respondents not answering the question on number of children desired or giving nonnumeric answers was very small in all surveys and such respondents are not included in the tabulations. The questions on desired family size used in each survey are presented here.

1993 TDHS: Ever-married women with living children: "If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?" Ever-married women without living children: "If you could choose exactly the number of children to have in your whole life, how many would that be?"

1988 TPHS: Ever-married women: "If you could start your marriage again and could have exactly the number of children you want, how many would that be?"

1983 TFHS: Ever-married women: "If you could choose the number of children to have in your whole life, how many would that be?"

1978 TFS: Ever-married women: "If you could choose the number of children to have in your whole life, how many would that be?"

2.2.2 Desire for More Children

If the woman (or her husband) was sterilized for contraceptive reasons, she was assumed to want no more children. The questions on desire for more children, although very similar in nature, were directed to different categories of women in each survey. However, it is still possible to calculate the proportion of currently married and (declared) fecund women from all surveys. The questions on desire for more children used in each of the four surveys are presented here.

1993 TDHS: Currently married, nonsterilised, nonpregnant women: "Would you like to have a/another child or would you prefer not to have any (more) children?" If the response is positive: "How many more children would you like to have in the future?" Currently married, nonsterilised, pregnant women: "After the child you are expecting would you like to have another child or would you prefer not to have any more children?" If the response is positive: "How many more children would you like to have in the future, not counting the one you are currently pregnant with?"

1988 TPHS: Ever-married, declared fecund, nonpregnant women: "Would you like to have a/another child in the future ?" If the response is positive: "How many (more) children would you like to have in the future?" Ever-married, declared fecund, pregnant women: "After the child you are expecting, would you like to have a/another child in the future?" If the response is positive: "How many (more) children would you like to have in the future, not counting the one you are currently pregnant with?"

1983 TFHS: Declared fecund women: "Would you like to have children in the future?" If the response is positive: "How many children would you like to have in the future?"

1978 TFS: Currently married and declared fecund women: "Would you like to have a/another child now or in the next few years?" If the response is negative: "Would you like to have a/another child anytime in the future?" If either of the answers is positive: "How many more children would you like to have in the future?" Women with no living children were not asked the last question on additional number of children. Currently married and pregnant women: "After the child you are expecting, would you like to have another child in the future?" If the response is positive: "How many more children would you like to have, not counting the one you are currently pregnant with?"

2.2.3 Planning Status of Children

This question was asked similarly in the last two surveys and information was collected for the planning status of children born during the last five years prior to the survey. The previous two surveys, however, inquired about the planning status of the last birth or pregnancy. The questions used in each survey are presented here.

1993 TDHS: Ever-married women with one or more live births during the last five years prior to survey time (asked for each birth in the last five years): "At the time you became pregnant with (NAME), did you want to become pregnant then, did you want to become pregnant later, or did you not want to be pregnant at all?" If she wanted to become pregnant later, she was asked: "How much longer would you like to have waited?"

1988 TPHS: Ever-married women with one or more live births during the last five years prior to survey time (for each birth in the last five years): "At the time you became pregnant with (NAME), did you want to become pregnant then, did you want to become pregnant later, or did you not want to be pregnant at all?"

1983 TFHS: Ever-married women with one or more pregnancies: "At the last time you were pregnant, did you want to have (a/another) child?"

1978 TFS: Ever-married women with one or more live births: "At the time you became pregnant with your last child, did you want to become pregnant then?" Currently pregnant women were not asked this question.

2.3 Measures of Wanted Fertility

2.3.1 Planned Total Fertility Rate

This variable is a recalculation of the total fertility rate from age-specific birth rates after subtracting from the actual number of births those classified as unwanted and mistimed according to the responses given to the question on the wanted status of the last birth. The main importance of this variable is that, unlike RWTFR, not only the births that are reported to be *unwanted*, but also those that are *mistimed* are excluded from the numerator. The mistimed births also represent unplanned fertility that would have been avoided. This approach splits the TFR into its planned (wanted) and unplanned (could be avoided or postponed by means of family planning) parts.

Exclusion of all the births that would possibly be eliminated during the calculation presents direct implications for the level of fertility that would be attained. Free from the effect of a question like desired family size that is hypothetical in nature, this variable allows achievable goals to be set for family planning program managers and policymakers. The numerator for the age-specific fertility rate is only the wanted births to women at that particular age group in the 12 months prior to the interview and the denominator is all women in that age group.

The proportion of previous births that are reported as unwanted or mistimed provides a conceptually simple indicator of the extent of fertility control failures. This indicator, however, may be seriously biased toward overstating the actual level of planned fertility due to reluctance on the part of the survey respondents to admit unwanted pregnancies in survey interview situations. The result, therefore, is expected to be an overestimate of planned fertility to the extent that women report unwanted births as wanted.

2.3.2 Expected Family Size

This variable is formed by adding the number of *living children* with the *additional children desired* and gives an idea about the expected completed family sizes of women of reproductive ages. This variable presents us with, given proper family planning efforts, what would be the fertility performance of women if they are given the chance of having exactly the number of additional children (or no more children) that they would like to have in the future. The expected family size of very young women is expected to be very close to their desired family size since they have no children, and that of older women will be very similar to their number of living children since most of them desire no more children. Therefore, the overall mean, as well as the expected family size of different cohorts of women, would represent the level of fertility if these women are able to produce exactly the number of children they want, valid from the date of the interview.

The planned total fertility rate and expected family size concepts inevitably assume that all women would use fully effective contraception. However, no contraceptive method is fully effective, and also, some women are unable to use contraception for health reasons, husband's disapproval, or religious reasons.

3 FERTILITY LEVELS AND CONTRACEPTIVE USE

As a result of high fertility and growth rates in the past, Turkey is a rapidly growing country and has a young population. Prior to 1960, fertility rates in Turkey were quite high, and there was no indication of a decline due to the pronatalist policy of the Government. However, parallel to the change of government policy from a pronatalist one to an antinatalist one, fertility rates started to decline considerably during the last decades. The total fertility rate declined from 4.3 births in 1978 to 2.7 births in 1993, representing a reduction of more than one-third over the past 15 years. Due to the lack of a significant family planning program effort, and the reliance of couples on withdrawal as the modal method of contraception, along with the considerable use of abortion, Turkey resembles Western Europe at the beginning of its fertility transition (Freedman, 1995).

Although fertility levels are declining, there is still an unmet need for family planning and a significant demand for fertility control. The 1993 TDHS, as well as the previous surveys, have proved once more that there are considerable numbers of women who want to stop childbearing; more than two-thirds of currently married women do not want to have any more children and 14 percent want to delay their next birth for at least two years. However, the overall use of modern contraceptives in Turkey is only 35 percent among currently married women and levels of modern method use are only slowly increasing (from 13 percent in the 1978 survey to 35 percent in the 1993 survey). Although the knowledge of modern contraceptive methods and the place to obtain these methods are almost universal (99 and 95 percent, respectively), only one in three currently married women uses a modern contraceptive method. The IUD is the most commonly used modern method (19 percent), followed by the condom (7 percent), and the pill (5 percent). The shift from traditional methods to the more effective long-term methods is very slow. Use of traditional methods is still an answer to birth control needs for 28 percent of currently married women. The use of abortion (18 induced abortions per 100 pregnancies) and high prevalence of traditional methods (28 percent of currently married women) is a clear indication of an unsatisfied demand.

The data indicate that the knowledge of modern contraceptive methods is universal, ever use of modern contraceptive methods is high (65 percent), and religious and approval reasons are only mentioned by less than 10 percent of currently married women who are not using any method. Therefore, if modern family planning methods are made widely available to women in Turkey by means of more powerful family planning programs, further reductions in the fertility levels would be attained.

4 REPRODUCTIVE NORMS

Hypotheses on fertility planning range from a single decision made at the beginning of marriage to decisions made regarding each child. An intermediate view suggests that a general plan is made at the time of marriage, but is adjusted to accommodate later changes. The single decision approach uses the desired or ideal number of children. If the reported desired family size is indeed an accurate measure of wanted fertility, then the observed total fertility rate can be split into its wanted and unwanted parts by subtracting mean desired family size from the observed total fertility rate.

According to the 1993 TDHS, the mean desired family size is 2.4 among ever-married women as well as currently married women. Although fluctuating, desired family size has been declining over time. The data on desired family size of Turkish women can be traced back to 1963, the date of the first nationwide demographic survey in Turkey. The mean number of children desired was 3.2 in 1963. The 1968 survey also found that the mean desired family size was 3.2. In the 1973 survey, it was down to 2.6. The next

survey in 1978 showed that it had increased to 3.0, and the following two surveys (1983 and 1988) found that the mean desired family size was continuing to decrease (2.7 and 2.1, respectively). However, according to the 1993 TDHS, the mean desired family size was found to be 2.4. The proportion of women giving nonnumeric responses such as "Up to God" and "Don't know" has always been very small.

The overall trend in desired family size is a decreasing one, but with some fluctuations. This period coincides with the fall in fertility rates in Turkey. The total fertility rate is down from 6.2 in 1963 to 2.7 in 1993. These findings can be interpreted to indicate a link between fertility and desired family size. This inference, however, requires either the deliberate reflection of women's control over fertility or women's rationalization of their existing children. A control over fertility requires the women to have fixed fertility desires as well as a perfect employment of contraception. Women's rationalization of existing children, however, implies that these desires are not fixed and subject to change in accordance with the number of living children.

In interpreting the implications of the fertility preference data, it is important to assess whether desired family size is stable or not. The best form of evidence comes from results of the previous surveys. An analysis of a specific group of women born during a particular time period reflects a much more meaningful trend in women's desires than just comparing the cross-sectional data. It therefore becomes possible to eliminate the effect of the inclusion of younger women into the sample and exclusion of older women out of the sample in each consecutive survey (a bias that may, in both cases, lower the mean desired family size as young women usually have smaller desires than older women).

Table 4.1 shows the mean desired family size and number of living children for various cohorts of ever-married women that can be traced from the 1978, 1983, 1988, and 1993 surveys. The data permit researchers to examine four cohorts at four points in time, five years apart in their reproductive career. Nevertheless, the degree of comparability is limited to the extent that some women leave the cohorts by death and some may join the cohort by marriage. The overall effect of late age at marriage and dropouts are assumed to be minimal.

Table 4.1 Mean desired family size and mean number of living children by birth cohorts, 1978-1993

Birth Cohort	Mean	1978	1983	1988	1993
1948-52	Desired family size	3.2	2.8	2.5	2.5
	Living children	3.6	4.1	4.0	4.0
1953-57	Desired family size	2.9	2.7	2.3	2.5
	Living children	2.7	3.6	3.6	3.8
1958-62	Desired family size	2.8	2.6	2.2	2.5
	Living children	1.8	2.6	3.0	3.4
1963-67	Desired family size	2.8	2.5	2.0	2.4
	Living children	0.9	1.7	2.3	2.7

The results of the birth cohort analyses show a consistent decline in desired family size from 1978 to 1988. All the women in different cohorts expressed decreasing family size desires over time and there was no cohort consistency. However, the mean desired family size has increased slightly in the 1993 survey for cohorts born after 1952. Although the level of fertility continued to decline during the period 1988-1993, the mean desired family size showed an increasing trend, both for cohorts and for overall women. This finding is contradictory to expectations and relevant literature. Since the 1988 survey findings are unexpectedly out of the trend, the trend without considering the 1988 survey is believed to reflect a better picture of how the mean desired family size has declined in Turkey. The main implication of the data, with or without considering the fluctuation in 1988 survey, is that family size preferences of Turkish women are not constant but changing (declining) over time.

A comparison of the number of living children by birth cohorts suggests that the mean number of living children is increasing over time despite the fact that the mean desired family size is declining. There is no correlation between the trends in women's desired family size and number of living children.

These findings of the cohort analysis do not support the presumed association between desired family size and fertility. The overall decreasing trend in both desired family size and fertility levels seems to be misleading in assuming a direct connection between these two variables. The Turkish data on desired family size clearly challenge the usefulness of this concept in fertility prediction analyses.

Women's responses to these questions are less reliable than those about reproductive expectations. Bongaarts (1990) summarises the reasons why desired family size cannot be used as a measure of wanted fertility: 1) rationalization (women who have had unwanted births make an upward adjustment in their stated desired family size), 2) nonnumerical responses (some women are unable or unwilling to respond to the question on desired family size), 3) involuntary (some women may face infecundity or marital disruption during their reproductive life) or voluntary (due to economic, social, health, or other reasons, some women may want to stop sooner than they would under more favorable circumstances) limitation of fertility, 4) infant and child mortality (infant and child deaths which are replaced by additional births are included twice in measures of wanted fertility and only once in measures of desired family size), 5) compositional preferences (some women may continue childbearing if they could not have a particular gender composition of their family), and 6) changes in the timing of childbearing (changes in the timing of fertility affect the total fertility rate, which is a period measure, but not the desired family size, which is a cohort indicator). The effects of these factors on the relationship between desired family size and wanted fertility are difficult to quantify precisely. As these factors partly offset one another, the net impact could in theory be positive or negative. Data on desired family size can be best regarded as indicators of a society's reproductive norms.

5 REPRODUCTIVE EXPECTATIONS

Reproductive expectations are believed to be more predictive of short-term future fertility. Reproductive expectations of women can be divided into three groups: intention to terminate or postpone childbearing, number and timing of additional children wanted, and planning status of previously born children.

5.1 Intention to Terminate Childbearing

Another question often asked women in demographic surveys is whether they want to continue or terminate childbearing. Pregnant women are asked to state their desire for another child after the one they are expecting. The women who want to have more births represent the potential contributors to fertility and the women who want to stop childbearing represent the potential demand for family planning. The women who have been sterilised for contraceptive purposes are classified as wanting no more children. Increasing proportions of women wish to avoid further childbearing—50 percent in 1978, 61 percent in 1983, 65 percent in 1988, and 70 percent in 1993.

The percentage of women not wanting more children is related to the distribution of the number of living children. Figure 5.1 shows the percent distribution of currently married women who desire more children according to the number of living children. As expected, the desire for more children declines rapidly as the number of children increases. Eighty-nine percent of women with no children say they want a child and 2 percent say they do not want any children. As the number of children increases, the proportion who want another child drops, while the proportion who want no more children increases. Eighty-one

percent of women who have two living children and 91 percent of women who have three living children want no more.

The inclusion of women who are currently pregnant complicates the measurement of future childbearing predictions. For these women, the question on desire for more children is rephrased to refer to desire for another child, after the one they are expecting. Taking into account the way in which the preference variable is defined for pregnant women, the results include the current pregnancy as equivalent to a living child in the number of living children variable. In addition, the answers of pregnant women on preferred waiting time before the next birth presumably include the remaining gestation period of the current pregnancy and are thus not strictly comparable with the answers of nonpregnant women.

Not all women who want to cease childbearing take the necessary preventive measures for an unwanted pregnancy and not all women who want to have another child(ren) continue to have a birth. As Figure 5.2 illustrates, there are some women in the 1993 TDHS who are not using contraception even though they have declared that they want to stop childbearing, as well as some women who are using contraception although they want to have more births. Use of a modern method increases to 40 percent among women who want no more children. On the other hand, nearly one-fourth of women do not use any method of contraception although some of them declare a desire to use a method in the near future. In addition, another one-fourth of women use traditional methods. This figure reveals the fact that reproductive intentions of women, regardless of whether they desire to have more children or not, are not adequately translated to reproductive performance.

5.2 Number and Timing of Additional Children Wanted

Respondents who expressed a desire for more children were further asked to state the number of additional children they desire and the preferred timing for the next birth. Table 5.1 presents the percent distribution of currently married women according to the number of additional children desired according to number of living children. Women who are sterilised and undecided are assumed to want no more children. As the number of living children increases, the proportion of women desiring to have more births declines. Especially after having their first child, the proportion of women desiring to have two or more children declines dramatically.

The responses to the desire for more children and the timing of the next birth can be classified into four groups: want no more children, want another child immediately (within 2 years), want another child in the future (after two years), and other answers such as undecided (want more but undecided when) and declared infecund. According to the 1993 TDHS, nearly 10 percent of currently married women wanted to have another child within two years and 14 percent wanted to have more births but wanted to have them at a later time (Table 5.2).

Table 5.1 Percent distribution of currently married women by number of additional children wanted according to number of living children (including any current pregnancy), 1993 TDHS

Number of living children	Additional number of children wanted				Declared infecund	Total	Number
	0	1	2	3+			
0	2.0	12.9	55.4	20.2	9.5	100.0	413
1	25.4	55.2	13.2	4.1	2.1	100.0	1111
2	84.1	10.7	1.6	0.7	2.9	100.0	1850
3	92.1	3.7	0.5	0.8	2.9	100.0	1227
4	91.9	1.4	0.7	0.2	5.8	100.0	706
5+	92.3	1.4	0.4	0.6	5.2	100.0	961
Total	72.0	14.9	6.7	2.5	3.9	100.0	6269

Figure 5.1 Desire for More Children among Currently Married Women by Number of Living Children, 1993 TDHS

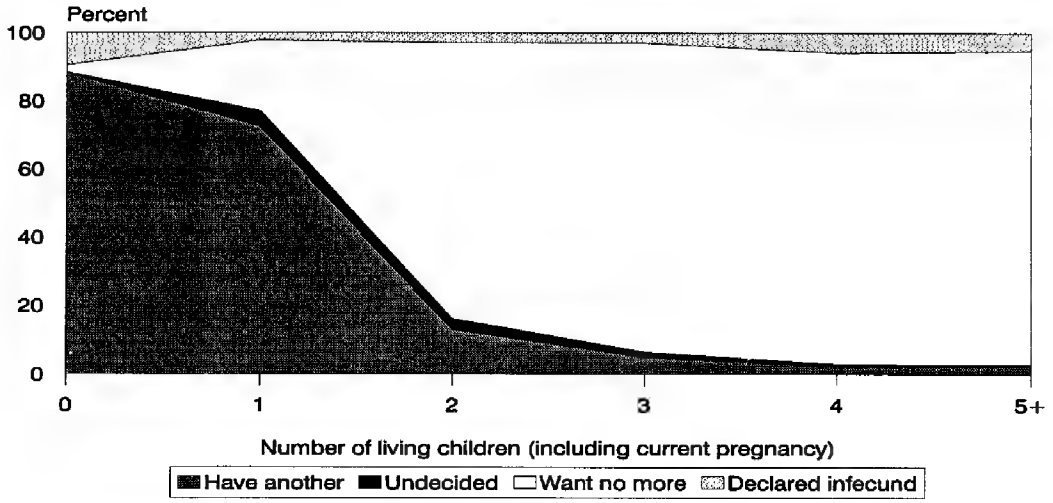

Figure 5.2 Desire for More Children among Currently Married Women by Contraceptive Use Status, 1993 TDHS

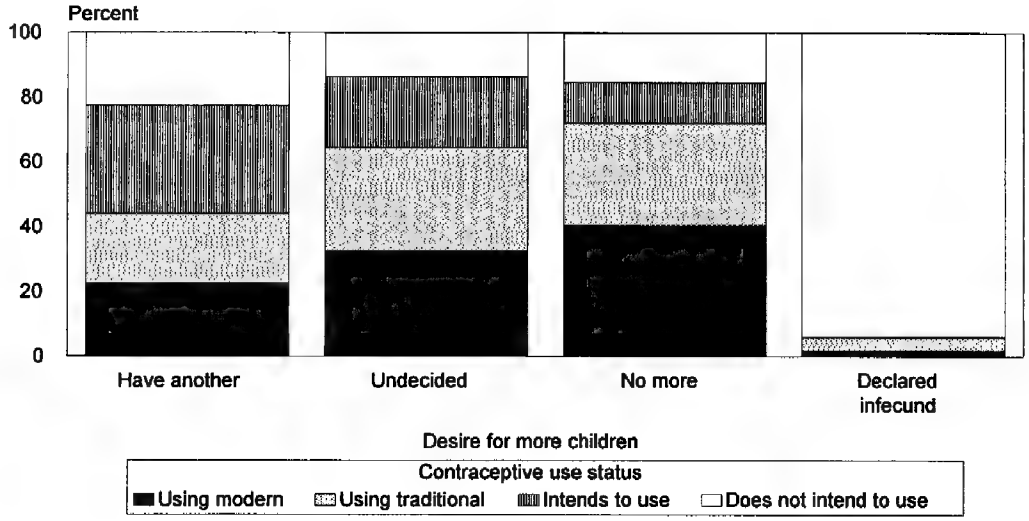

Table 5.2 Percent distribution of currently married women by desire for more children according to number of living children (including any current pregnancy), 1993 TDHS

Number of living children	Desire for more children: Want within 2 years	Want after 2 years	Want, unsure timing	Want no more	Declared infecund	Total	Number
0	77.5	8.9	2.1	2.0	9.5	100.0	413
1	15.5	56.0	1.1	25.4	2.1	100.0	1111
2	3.9	8.7	0.4	84.1	2.9	100.0	1850
3	2.4	2.3	0.3	92.1	2.9	100.0	1227
4	0.7	1.4	0.1	91.9	5.8	100.0	706
5+	0.9	1.3	0.2	92.3	5.2	100.0	961
Total	9.7	13.9	0.6	72.0	3.9	100.0	6269

5.3 Expected Family Size: Completed Cohort Fertility

Table 5.3 Mean number of living children (including any current pregnancy) and mean expected family size by age groups of ever-married women, 1993 TDHS

Age group	Mean expected family size	Mean number of living children
15-19	2.19	0.78
20-24	2.31	1.42
25-29	2.57	2.16
30-34	3.01	2.84
35-39	3.54	3.46
40-44	3.88	3.85
45-49	4.01	4.00
Total	3.09	2.75

The number of living children represents uncompleted fertility performance for some women, especially for young women. The number of children expected for a woman can be calculated by combining the number of living children with that of additional children wanted. This measure is believed to represent the completed family size of different cohorts of women under the assumption that all women will behave consistently according to their desire for more children—that is, they will either limit their fertility or will have exactly the number of additional children they would like to have. Table 5.3 shows the mean number of living and expected children according to age groups of ever-married women. Women who are not currently married are assumed to want no more children.

Mean expected family size is very close to the mean number of living children for women above age 35, which is consistent with the high proportions of women who desire to have no more children. For younger age groups, the mean expected family size is higher than the mean number of living children, but not much different than overall desired family size. As these women have the children they desire, both means approach each other.

Expected family size, or completed cohort fertility, reflects the level of fertility if all women achieve the number of children they would like to have. The figures are strongly influenced or determined by high proportions of women who would like to cease childbearing. Mean expected family size increases with age and the difference between the mean expected family size and mean number of living children disappears for women above age 35. The overall difference between the two means for all women is quite small, implying that very small numbers of women interviewed in the survey plan to have more children, and very small number of births are expected if women's behaviour is consistent with their desires.

5.4 Planning Status of Children

In the 1993 TDHS, women were asked a question for each child born in the preceding five years to determine whether the particular pregnancy was planned, unplanned but wanted at a later time, or unwanted. This question forms a potentially powerful indicator of the degree to which couples successfully control childbearing. As Table 5.4 illustrates, two-thirds of the births that occurred during the last five years preceding the survey were wanted. The percentage of wanted births was as high as 91 percent among women with one living child, and then the percentage decreases gradually. When asked about the planning status of the last born child in the five years preceding the survey, 63 percent of currently married and fecund women in the 1988 TPHS declared that they wanted that birth, 10 percent said that it was mistimed, and 27 percent said that it was unwanted.

Table 5.4 Percent distribution of births in the last five years preceding the survey by planning status of births, according to birth order, 1993 TDHS

Birth order	Planning status of birth: Wanted then	Wanted later	Not wanted	Total	Number
1	90.6	8.6	0.8	100.0	1412
2	68.9	23.7	7.3	100.0	1095
3	59.9	12.1	28.0	100.0	614
4+	40.8	4.6	54.5	100.0	1107
Total	67.5	12.0	20.4	100.0	4228

Source: Ünalan (1994)

Planning status of births in the last year can be considered as a more reliable and certainly a more current estimate of unwanted and mistimed pregnancies, as they represent the experience of a more recent time period. However, the overall trend is very similar: overall, 68 percent of the 827 births in the last 12 months were wanted, 11 percent were wanted later, and 21 percent were not wanted. A large majority of the first births were wanted, while the fourth- and higher- order births were more likely to be unwanted than the previous order births.

6 WANTED FERTILITY

Fertility outcome is defined as a combination of wanted births and unwanted or mistimed births. Births that are not wanted and mistimed ideally reflect the births that can be avoided or postponed. In demographic literature, there are various measures which are used to calculate the wanted fertility rate. These measures are comparable to the total fertility rate except that they only represent wanted births. Comparison of actual rates with wanted rates indicates the potential demographic impact of unwanted births. Generally, such measures use desired family size or desire for more children, and the methodology used to calculate each measure is quite different (see section 2.3). Such measures depend on either answers to a hypothetical question or a woman's intention for future births. However, a truly comparable figure with the total fertility rate must consider the planning status of births that are used to calculate the total fertility rate. Provided that there are data on planning status of births during the period in question, it is possible to divide the total fertility rate into its wanted and unwanted parts. One such approach excludes only unwanted births from the calculation. However, it is not always possible to divide a fertility indicator into only two parts. There are always some women who may consider their births as neither wanted nor unwanted, but mistimed.

In the 1993 TDHS,[1] answers to the question on planning status of recently born children were classified as wanted, unwanted, and mistimed. In section 5.4, some descriptive statistics regarding this variable are presented. The alternative measure proposed in this study calculates the total fertility rate by excluding last births that are mistimed as well as those that are not wanted. The reason is that the mistimed births also represent the births that can be avoided (postponed) provided that the necessary measures are taken. Those mistimed births, then, turn into either wanted births or unwanted births.

For comparative purposes, all wanted fertility measures are calculated here and the results from various wanted fertility measures calculated from the 1993 TDHS data are shown in Table 6.1. All wanted fertility rates, although there are differences in their methodology, express the level of fertility that would result if all unwanted births were eliminated. Comparison of actual rates with wanted rates indicates the potential demographic impact of the elimination of unwanted births.

Table 6.1 Alternative wanted fertility measures and total fertility rates for the year preceding the survey, by residence and region, 1993 TDHS

Residence and region	Planned total fertility rate	Desired total fertility rate	Wanted total fertility rate	Reported wanted total fertility rate	Mean desired family size	Total fertility rate
Residence						
Urban	1.61	1.74	1.84	1.88	2.32	2.37
Rural	1.87	2.00	1.90	2.20	2.53	3.10
Region						
West	1.52	1.67	1.75	1.79	2.16	2.03
South	1.63	1.81	1.80	1.88	2.52	2.37
Central	1.58	1.67	1.76	1.87	2.34	2.44
North	2.15	2.40	2.30	2.58	2.37	3.15
East	2.22	2.26	2.14	2.56	2.91	4.40
Total	1.71	1.85	1.87	2.01	2.40	2.65

The data on planning status of children can be used to gauge the effect on period fertility of the prevention of unwanted births. However, the question is extremely demanding. The respondent is required to recall accurately her wishes at one or more points in the last five years and to report them honestly. The danger of rationalization is present; an unwanted conception may well become a cherished child. Despite these potential problems of comprehension, recall, and truthfulness, results from previous surveys have proved surprisingly plausible. Respondents are clearly willing to report unwanted conceptions, although some post-factum rationalization probably occurs; the result is probably an underestimate of unwanted fertility.

The planned fertility rates are calculated in exactly the same manner as the conventional age-specific fertility rates, except that births classified as unwanted or mistimed are omitted from the numerator; the remainder can be cumulated to form a planned total fertility rate which is analogous to the conventional total fertility rate. The planned total fertility rate (PTFR) can be interpreted as the total number of planned births

[1] Previous demographic surveys in Turkey included similar questions. Unfortunately, except for the 1988 survey, either because of wording of the question and the different answer categories or because the answers were restricted to specific of births (i.e., only last births), such data are not comparable (see section 2.2.3).

a woman would bear by age 50, if she experienced the planned age-specific fertility rates of the past five years. The PTFR takes observed fertility as the starting point, and thus it can never be larger than the actual TFR.

Table 6.2 Percent reduction of the TFR implied by the exclusion of unwanted and mistimed births according to residence and region, 1993 TDHS

Residence and region	TFR	PTFR	Percent reduction implied
Residence			
Urban	2.37	1.61	32.1
Rural	3.10	1.87	39.7
Region			
West	2.03	1.52	25.1
South	2.37	1.63	31.2
Central	2.44	1.58	35.2
North	3.15	2.15	31.7
East	4.40	2.22	49.5
Total	2.65	1.71	35.5

Table 6.1 suggests that, if all unwanted fertility were prevented, the total fertility rate would drop from 2.65 to 1.71. This represents a relatively modest decline of approximately 36 percent in the TFR and suggests that many couples in Turkey are not successful at planning their fertility. Planned fertility rates are either below or very close to replacement level fertility in different geographical areas of the country (Table 6.2).

The planned total fertility rate is based on answers to planning status of births which are believed to be underreported. If there is underreporting because of some women who did not report their previously unwanted children as unwanted, then the actual rates are expected to be even lower. Of course, it is almost impossible to determine the extent of underreporting from data.

The observed total fertility rate is the sum of its wanted and unwanted components. Unwanted births are classified in this study as those births which were declared as not wanted and mistimed. The resulting births, after the deletion of births which could be avoided or postponed through effective contraceptive use, were then used in the calculation of the "planned total fertility rate." Table 6.2 compares the two rates by geographic region and urban-rural residence. Overall, the figure for the whole country implies a reduction of 36 percent in the total fertility rate if those births which are unwanted and mistimed could be avoided or postponed. Implied reduction in current fertility levels increases to 40 percent in rural areas, and as high as 50 percent in the East Region of Turkey. Even in the West Region, which already has below replacement fertility, there is a chance of a 25-percent reduction in fertility.

The planned total fertility rate, regardless of residential differences, is around or below replacement level fertility. The difference almost disappears between urban and rural areas, while it becomes less than one child between the West and East Regions.

7 CONCLUSIONS AND DISCUSSION

Although the topic of fertility preferences has remained controversial, many demographic surveys conducted worldwide in the past three decades have included questions on desired family size, desire to stop childbearing, and planning status of past births. The findings have been used by scientists as important indicators of women's or couple's willingness to use contraception. As a result of such efforts in trying to quantify the amount of gain that could be achieved through meeting this demand, various measures were developed that are comparable to the total fertility rate, the most widely used measure of recent fertility levels.

The findings indicate that, as in most other developing countries, a preference for smaller families was evident as early as 1978, and has become even more widespread in Turkey since then. Not only are younger cohorts choosing smaller family size norms but also older cohorts of women in Turkey are switching from a desire for an average of three children in 1978 to 2.5 children in 1993. The proportion of women who say that they want no more children has increased during that period by 20 percent.

A variety of existing wanted fertility indicators that use planning status of last births was employed in this study. The total fertility rate was recalculated from the 1993 TDHS data by excluding unwanted and mistimed births in the calculation. The resulting measure was called the "planned TFR," which implies the TFR that could only be achieved through successful planning of women's or couple's fertility. The difference between the TFR and PTFR also reflects the potential for the decline in current levels of fertility. Among other wanted fertility measures, the PTFR approach, which is proposed in this study, resulted in the lowest possible TFR that could be achieved. Since this approach takes into account wanted births only, not mistimed or unwanted births, and due to the significant proportion of women with mistimed births, it resulted in the lowest value among all the measures. The family planning programme efforts must consider women who want no more children and those who desire to space their children as potential candidates for contraceptive use. The PTFR approach has more direct implications for programme managers compared with other approaches. Although other measures give similar results ranging from 2.40 to 1.85 children in the case of Turkey, the variation is expected to be larger in other developing countries with higher levels of fertility. However, even in a country like Turkey with declining actual and desired family sizes, the amount of decline in fertility that could be achieved is considerable. In addition, even this figure is an underestimate, as some women may have a tendency to state unwanted children as wanted.

This study demonstrates that with the existence and effective use of modern family planning methods, current fertility levels which have shown a dramatic decline in the past decades would further contribute to a decline in the TFR from 2.7 to 1.7 children. This drop could only be achieved if all unwanted births were eliminated and if all mistimed births were postponed. The result would be the minimum possible total fertility rate in the absence of unwanted and mistimed births.

Given the important contribution of unplanned fertility to observed fertility, in order to achieve lower fertility levels in the future, more efforts must be directed toward increasing the availability and accessibility of family planning programmes. Even though Turkey has achieved an important success in reaching low fertility levels toward the end of the 20th century, there is still a considerable portion of women who either use traditional methods or do not use any method at all to avoid or postpone their childbearing.

Therefore, future efforts on behalf of programme management should be directed to switching women or couples from using traditional methods to modern methods, as well as the effective use of modern family planning methods. Family planning programmes must provide the means for couples to achieve their fertility desires. Research findings have reassuringly shown that women in Turkey have small family desires and a strong desire to limit their childbearing once they have two or three children. Much of this potential

demand for family planning is not being met. One recent attempt to measure the reduction in the TFR using the unmet need concept estimated a 16 to 26 percent reduction in fertility in Turkey by means of satisfying the unmet need (Westoff and Bankole, 1995). Family planning programmes need to extend their reach and be acceptable to women or couples. However, not all women in Turkey are willing and ready to use modern methods. Further research is needed to study the determinants of non-contraceptive behaviour of women who want no more children or who want to space their children.

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